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Evaluation of Civil Engineering Operations Flight Competitive Sourcing Standards and Metrics

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EVALUATION OF CIVIL ENGINEERING OPERATIONS FLIGHT COMPETITIVE SOURCING STANDARDS AND METRICS

THESIS

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Abstract

The Performance Work Statement (PWS), which defines the requirements and shapes the outcome of the activity under contract, and the Quality Assurance Surveillance Plan (QASP), which is vital in identifying what is to be evaluated, become critical documents as the Air Force enters into more competitive sourcing contracts. Currently, contractors and Most Efficient Organizations (MEO) are evaluated by the QASP based upon the requirements found in the PWS. It is imperative the PWS and QASP documents have adequate performance metrics and that they are applied appropriately to evaluate the contractor or MEO.

This research collected PWS and QASP documents from eight Civil Engineer Operations Flights across the Air Force that have completed or are undergoing competitive sourcing. 161 performance standards and metrics were identified and an evaluation was conducted on them to determine if the standards and metrics were sufficient to evaluate the contractor or MEO. The two-part evaluation system was developed from metric design literature and features from both Total Quality Management and the Government Performance Results Act. The evaluation system was also applied to Air Force Civil Engineer Support Agency metrics and templates.

The results indicate critical areas of Civil Engineer Operations Flight are not sufficiently evaluated due to insufficient and improperly designed standards and metrics. As a result of this research, 19 metrics were developed for evaluating the Operations Flight along with an evaluation system that can be used to assess the design of metrics currently used by any organization.

EVALUATION OF CIVIL ENGINEERING OPERATIONS FLIGHT COMPETITIVE SOURCING STANDARDS AND METRICS

1. INTRODUCTION

Background

The United States Government seeks ways to increase the efficiency of government agencies and reduce costs of conducting business. One method of increasing efficiency is through competitive sourcing. The Department of Defense's (DoD) Competitive Sourcing began in 1955 and continued when the Office of Management and Budget (OMB) initiated Circular A-76 in 1966 (USGAO-2, 1999, 3). Circular A-76 directed any government activity identified as a commercial activity (CA), and not classified as inherently governmental, to be competed against the private sector; government in-house bids would compete against private sector bids for the commercial activity. A CA is simply defined as a service that is available in the private sector (USDATL, 2000, 13).

As stated in the Vice President's Third Report of the National Performance Review, Americans want 'to get their money's worth' and want a Government that is more businesslike and better managed (OMB-1, 1, 2001). Therefore, the goal of competitive sourcing is to provide services at minimum costs while sustaining or improving performance (USDATL, 2000, 13). Through competitive sourcing, the

government focuses on core mission competencies and service requirements (OMB-1, 1, 2001).

Competitive Sourcing is expected to trim costs by competing approximately 230,000 Department of Defense positions between Fiscal Year 1997 and Fiscal Year 2005 (DoD-1, 2001, 1). The expected savings over the same eight years is 11.2 billion dollars, which could be reallocated for other defense priorities (DoD, 2001, 1). Also, Competitive Sourcing promotes competition, which promotes improved performance at reduced costs (USDATL, 2000, 14). Therefore, it is vital in these budget-crunched years that competitive sourcing is properly initiated and evaluated.

The critical component of the competitive sourcing program is the cost comparison, which competes government employees against the private sector (USDATL, 2000, 13), and the key document for the cost comparison is the Performance Work Statement (PWS). The PWS is a document that is developed for all activities being solicited for contract. The PWS defines what service is being requested, the measurements of performance (standards and metrics), and timeframes required (OMB-3, 2001, 13). The PWS should also be performance oriented by specifying what outcomes and measures are desired and not placing directions on how to achieve the outcomes and measures (OMB-3, 2001, 13). Ideally, effective standards found within the PWS will lead to the proper evaluation metrics used to evaluate the performance and outputs of the CA.

The standards found within the PWS are the basis for the formulation of metrics used to measure the performance of the service provider. The metrics used to measure the performance of the service provider are found within the Quality Assurance

Surveillance Plan (QASP). The QASP is written to cover the life of the service contract and contains methods of surveillance, the performance metrics, and sometimes, incentives tied to the performance of the service provider.

There are two broad categories of metrics used to evaluate the activity under contract: financial and non-financial. Financial metrics gauge if the efforts to competitively source have reduced overall activity costs and address the question of how much money, if any, was saved. However, financial metrics "do not directly address the dimensions of productivity, quality, timeliness, and responsiveness to customer needs" (Buchheim, 2000, 309). Therefore, non-financial metrics have been established. Non-financial metrics evaluate customer satisfaction, quality, and productivity. Together, financial and non-financial metrics form the performance metrics used to evaluate the service provider. The performance metrics are "a common and mutually reinforcing focus on achieving program results and customer satisfaction, measuring performance, and using performance data to identify and select improvement opportunities" (USGAO-4, 1999, 4). If the performance standards in the PWS are written well, the standards will lead to a method to evaluate the service provider to ensure the Government is receiving the best value for their money while meeting mission requirements.

This research effort will focus on the performance standards and metrics found within the PWS and QASP documents of competitive sourcing efforts. Air Force performance standards and metrics have been evolving for at least 20 years and their effectiveness is not known. By evaluating performance standards and metrics of similar competitive sourcing efforts, the effectiveness of the performance measurement can be

evaluated. The properly designed standards and metrics that are found should be effective in supporting the Air Force mission.

Problem Statement

Performance standards and metrics currently used in the competitive sourcing process may not be sufficient to evaluate performance in all of the required areas for the service provider to meet Air Force goals.

Research Objectives

- Evaluate current PWS performance standards and QASP metrics for proper design to meet Air Force goals
    - Develop a performance standard and metric evaluation system from metric design literature, features from Total Quality Management and Government Performance and Results Act, and current Civil Engineering metrics
    - Identify improperly designed standards and metrics and provide recommendations for improvement
- Identify Operations Flight functional areas not evaluated by PWS performance standards and QASP metrics

Research Methodology

This research will be accomplished by a qualitative review of the performance standards and metrics from a representative sample of Air Force PWS and QASP

documents. The standards and metrics examined will come from bases having completed the competitive sourcing process and also from bases currently undergoing the process. Performance standards and metrics will be extrapolated from the documents and compiled for evaluation. An evaluation system will be developed from metric design literature, components of Total Quality Management and the Government Performance and Results Act, and from additional inputs from Civil Engineering metrics. Both qualitative and quantitative evaluation measures will be used to determine if the PWS standards and QASP metrics are effective in supporting the Air Force mission. Analysis will focus on similarities and differences within the measurements of performance, what critical areas of the Civil Engineering Operations Flight are being evaluated by measurements of performance, and what areas are not evaluated by measurements of performance. Potential differences within the measurements of performance will be highlighted along with the areas not evaluated by the measurements of performance within the PWS standards and QASP metrics.

Scope of Research

Civil Engineering competitive sourcing documents were sought from ten Air Force Bases from around the United States. The bases were selected based upon criteria listed in the methodology. The selection criteria were used to obtain a variety of bases, therefore, a variety of competitive sourcing documents. From within the Civil Engineering competitive sourcing documents, only the Operations Flight standards and metrics were chosen for evaluation due to the large number of standards and metrics and the time commitment for evaluation.

Relevance

This research will evaluate performance standards and metrics used in the competitive sourcing process. The Air Force continues to compete commercial activities with the private sector, and it is imperative the Air Force spends taxpayers' dollars effectively and efficiently. The Air Force is trying to obtain the best value for its money and will continue to look for ways to improve its efforts. By focusing on the performance standards and metrics and the outcomes of an activity, the Air Force will have the ability to measure the service being provided and have the ability to evaluate the service to ensure the service meets the needs of the Air Force. If the standards and metrics are well written, the service provider has data to guide improvements. This in turn improves efficiency and provides better service for the money. The results of this research will highlight areas of differences and recommend effective and efficient standards and metrics to be used in future PWS and QASP documents.

Summary

This chapter provided background information on the competitive sourcing process, the PWS document and standards, and the importance of performance metrics in the QASP. The research objectives were outlined as was the methodology that was used to collect the information. Finally, this chapter outlined the scope of the research and the relevance to the Air Force mission.

Chapter 2 provides the literature review used in this research effort. It discusses the concept of outsourcing and how it relates to the Government. Chapter 2 provides

more in depth information on both the competitive sourcing and cost comparison processes and how the Government conducts them. A detailed description is then given for the critical documents of competitive sourcing, emphasizing their importance to the competitive sourcing process. Finally, literature is introduced for the proper design of a performance measurement system. This information provides an outline used to establish a performance standard and metric evaluation system.

Chapter 3 discusses the competitive sourcing process specific to the Air Force and the civil engineering community. Chapter 3 outlines the methodology used in selecting the Air Force bases for this research effort. The bases are identified and the competitive sourcing documents solicited. Chapter 3 then identifies the steps used in extracting and compiling the performance standards and metrics. Finally, the steps to create the evaluation system are discussed and then the evaluation system is applied to the performance standards and metrics.

Chapter 4 contains the analysis of the performance standards and metrics. Each Operations Flight performance measurement is evaluated with the evaluation system contained in Chapter 3. Each performance measurement evaluation lists justifications as to why the measurement is or is not properly designed. Also, Civil Engineer Operations Flight critical areas not evaluated by the current standards and metrics will be identified.

Air Force Civil Engineer Support Agency Operations Flight metrics and templates were also evaluated to identify critical areas not sufficiently evaluated. Using the results of the evaluations, 19 metrics were designed to adequately evaluate all critical areas of the Operations Flight as identified by this research.

Chapter 5 documents the results found by the evaluation of the standards and metrics and provides recommendations on improving some of the standards and metrics and also identifies critical areas needing measurements of performance. Recommendations are also provided to implement the designed metric evaluation system as well as the 19 proposed metrics. Research limitations and future research topics are also introduced.

2. LITERATURE REVIEW

The purpose of this chapter is to provide background information on the importance and use of performance standards and metrics and discuss potential problems that exist today with their use. The literature summary covers the topics of outsourcing and the A-76 process and how they relate to one another. A history of the A-76 process is given along with a discussion of the cost comparison process. An introduction is then given to the critical documents, the Performance Work Statements (PWS) and Quality Assurance Surveillance Plan (QASP), used within the A-76 process followed by an outline for the design of performance metrics and the general data categories of metrics used in this research. Finally, key features of Total Quality Management (TQM) and the Government Performance Results Act (GPRA) will be identified and their importance to the evaluation of PWS performance standards and QASP performance metrics will be discussed.

Outsourcing

Outsourcing is a strategic term used by private sector companies seeking to increase their company's skill and resources. Outsourcing can simply be defined as transferring the ownership of an internal process or function to an external supplier (Outsourcing Center, 2001, 2). By outsourcing certain functions, companies can focus on their core competencies where they obtain "definable preeminence" and can offer their customers unique value (Quinn, 1994, 43). Results of outsourcing can be

significant because the outsourcing company gains the utilization of an external company's resources, to include investments, innovations, and specialized capabilities, all of which would be too expensive or impossible to duplicate internally (Quinn, 1994, 43). It has also been found that outsourcing can lower investments and create better responsiveness to customer needs (Quinn, 1994, 43). The findings suggest a company can improve efficiency through the use of an external company's capabilities, such as its innovations and specialized capabilities, and improve efficiency by potentially improved customer responsiveness.

With this in mind, research conducted on an outsourced public-sector function evaluated if, indeed, there were the savings and increased efficiency. The results were less than flattering and did not yield solid support for outsourcing. In the research, an analysis was conducted to determine if quality and efficiency increased as cost decreased by outsourcing foster care at group homes. From this analysis, significant stumbling blocks were discovered. They included: a) the efficiency and effectiveness of processes were difficult to define, b) cost data was not maintained on in-house functions to make the post outsourcing comparisons, and c) many contracts were not monitored efficiently (Prager, 1996, 195-200). The actual study had to be abandoned due to the lack of pre-outsourcing financial data. The author of the study warns against getting too involved in outsourcing without considering long term effects (e.g., higher hidden costs regardless of initial savings). Despite the lack of support favoring outsourcing, many companies still seek to improve efficiency and decrease cost by outsourcing certain functions from within their organization.

The concept of outsourcing is not specific to private sector companies; the Government is also seeking ways to improve efficiency. The goals of competitive sourcing within the Government, specifically the Air Force, are much the same as the goals of outsourcing. The four goals of the Air Force Outsourcing and Privatization program are: 1) sustain readiness; 2) improve efficiency and reduce costs; 3) create funds for force modernization; 4) focus on core Air Force missions (SAF-1, 1997, 1). Due to some controversy over the term "outsourcing", the A-76 initiatives became known as "competitive sourcing" within the Government.

One aspect of competitive sourcing is improved efficiency. The improved efficiency of a public organization can lead to productivity improvement. Productivity improvement is defined as the "production of more and/or better services for each tax dollar spent and staff hour invested" and is a function of the following factors: top management support, committed people at all levels, performance measurement system, employee training, reward structures, community involvement, and feedback and correction mechanisms (Lee, 2000, 423). The factor most significant to this research effort is the performance measurement system.

The performance measurement system is a key component of "managing for results", which is an old ideal in Government (Aristigueta, 2001, 254). The government has continually sought ways to manage for results. Recently, the shift has taken the Government from focusing on inputs and processes to focusing on outcomes or results (Aristigueta, 2001, 254). By focusing on the outcomes of the processes, the "managing for results" theory is that effectiveness, efficiency, and accountability of Government will improve, which will lead to reduction in costs, increase in public satisfaction with the

Government, and improvement in quality of services (Aristigueta, 2001, 254). Managing for results is vital to reaching the goals established by the mission of the Air Force.

By identifying and selecting functions to undergo competitive sourcing, the Government seeks to improve efficiency. This efficiency improvement can only be evaluated if a properly designed performance measurement system has been implemented. Prior to the introduction of a performance measurement system, the history of Government competitive sourcing is outlined in the following section.

Competitive Sourcing (A-76)

Current Office of Management and Budget Circular (OMBC) A-76 policy was established through many revisions of the Bureau of Budget Bulletin 55-4. Bulletin 55-4 was published in 1955 with the basic premise that the Government should not be in the business of competing with its citizens. This bulletin created a policy in which the Government relied upon the services of the local community without the cost comparison concept. As a result, the services sought after were not cost effective and therefore, they were not in the best interest of the taxpayers (OMB-4, 2001, 3).

In 1957, the bulletin was updated to include the basic concepts of cost comparison to direct the government in obtaining the best service value. The Bureau of Budget was transformed into the Office of Management and Budget (OMB), and in 1966, OMB issued Circular A-76 that stated the cost comparison guideline found within the Circular supported the Government's efforts to continue to rely on the private sector (OMB-1, 2001, 1-2). OMBC A-76 was revised several times (e.g., 1979, 1983, 1986, and in

1999), giving guidance on conducting a cost comparison and further refining the cost comparison concept.

The 1999 revision to OMBC A-76 (previously listed) defines the competitive sourcing process used today. This revision contains three initiatives vital to the competitive sourcing process: achieve economy and enhance productivity (through competition), retain governmental functions in-house (certain functions are inherently governmental), and rely on the commercial sector (competitively source functions identified as a commercial activity) (OMB-1, 2001, 2). The "competition" and "rely on commercial sector" initiatives are the focus of the cost comparison discussed in the *Cost Comparison Process* section.

OMBC A-76, along with Air Force Instruction 38-203 and numerous other Department of Defense guidebooks (e.g., Cost Comparison Handbooks and Commanders Handbook on Competitive Sourcing), define the structured process of the cost comparison in which the Government competes against the private sector for the services desired. This competition, resulting from the cost comparison, allows commanders to make better business decisions regardless of the service provider (USDATL, 2000, 14). The current Circular attempts to maintain a balance of interests between federal managers, employees, and the private sector with that of federal taxpayers (OMB-1, 2001, 1). The steps of the A-76 process leading to the cost comparison and eventual service provider are found in Figure 1, *Outline of A-76 Process*.

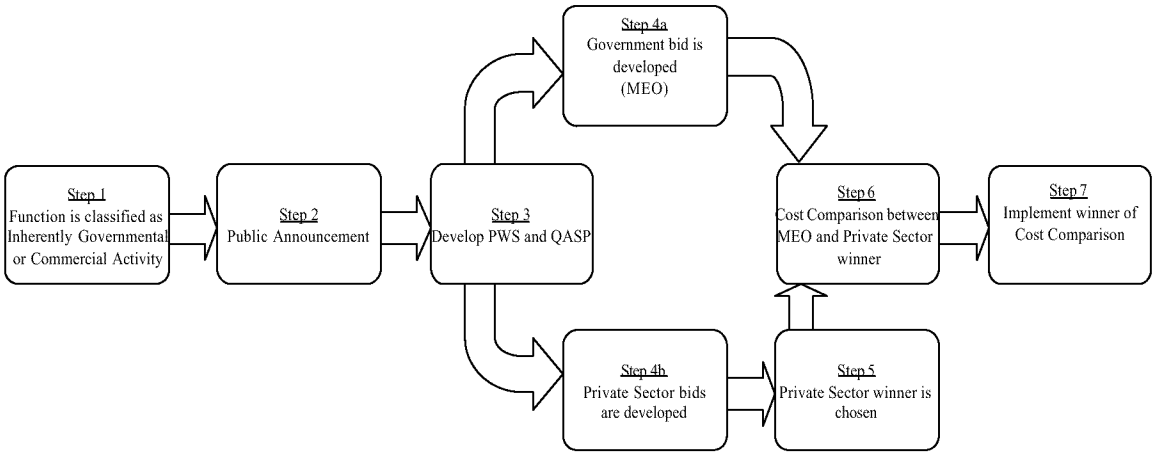

Figure 1. Outline of A-76 Process
(Adapted from USDATL, 2000, 17)

Step 1 of Figure 1 involves the classification of the function as either inherently governmental or as a commercial activity by the Headquarters of the United States Air Force (HQ USAF). Functions classified as inherently governmental are retained in-house and those classified as a commercial activity can be competitively sourced (OMB-3, 2001, 2). Step 2 is the public announcement of the function to be competitively sourced. This announcement begins the clock for the time allowed to complete a study; 24 months from the announcement to implementation for a single function and 48 months from the announcement to implementation for multiple functions (ACC, 2001, 4). Step 3 involves the development of the Performance Work Statement (PWS) and Quality Assurance Surveillance Plan (QASP). The PWS lists the requirements the government is seeking for the function and the QASP is the document that outlines the Government's contract inspection plan. Steps 4a and 4b are conducted simultaneously once the PWS has been released. The Government, through contracting personnel and subject matter experts, establishes its bid for the commercial activity based upon the information found in the

PWS while and the private sector companies develop their individual bids for the commercial activity based upon the information found in the PWS. The Government bid becomes known as the Most Efficient Organization (MEO). The MEO is defined as the Government's estimate of the resources required to perform the commercial activity and can be a mix of civilian employees, military members in special cases, and other contract support necessary to complete the Commercial Activity (AFMIA-1, n. pag.). Step 5 is managed by contracting and involves the evaluation of the private sector bids and choosing one winner among them. Step 6 is the cost comparison that competes the MEO bid against the winner of the private sector bids. The winner of the cost comparison is chosen based upon "best value" (discussed in the *Best Value Approach* section) to the Government and then, barring any protests or appeals, contract implementation, Step 7, is initiated.

The PWS/QASP documents are pivotal within the A-76 process and will be further discussed in the *PWS and QASP* section. Quality MEO and Private Sector bids rely upon these documents to lead to a fair and reasonable cost comparison and a successful contract implementation for the service provider.

Best Value Approach

The goal of every acquisition is to provide the Government the best value regardless of the acquisition process used. All competitive methods listed in the Federal Acquisitions Regulations (FAR) are acceptable to use in the A-76 process (i.e., sealed bid, two-step, and other competitive negotiated procurement techniques) (DAF-1, 2000, 86). The best value concept compares factors such as past performance and cost of the

private sector proposal and makes trade-offs (e.g., pay more if service provider has proven past performance) to ensure the Government is obtaining the better value (USGAO-2, 1999, 10). The objective of A-76 and the best value concept is to obtain the greatest benefit for the Government regardless of who provides the service. Through the process outlined in Circular A-76, the Air Force attempts to obtain best value by promoting competition to improve performance and reduce cost. To ensure sustained or improved performance is being achieved and Federal taxpayers are getting the best value for their money, performance metrics must be introduced and tracked prior to the cost comparison process.

Cost Comparison Process

At the heart of competitive sourcing is the cost comparison process. The cost comparison process focuses on two bids: the MEO and the winner of the private sector bids (OMB-3, 2001, 3), found in Step 5 of Figure 1, *Outline of A-76 Process*. Once the private sector bids have been reviewed and the bid that represents the best value from the private sector has been selected (Step 5 of Figure 1), the private sector bid and the MEO bid are compared and, again, the winner of the two bids is selected based upon the best value for the Government.

The cost comparison process contains two critical documents that determine a successful cost comparison: the Performance Work Statement (PWS) and the Quality Assurance Surveillance Plan (QASP) (Step 3, Figure 1). Both documents contain critical performance measurements that are vital in evaluating the performance of the service under contract. Without the performance measurements, the quality of the service cannot

be evaluated to determine if the Government and federal taxpayers are getting the best value.

PWS and QASP

The following sub-headings, *Performance Work Statements (PWS)* and *Quality Assurance Surveillance Plan (QASP)*, outline the PWS and QASP documents, respectively, and provide background information on their significance to performance standards and metrics.

Performance Work Statement (PWS)

The PWS, as part of the solicitation, is the most critical document of the A-76 cost comparison because all documents submitted by the Government and the private sector regarding the solicitation are based upon the PWS (USDATL, 2000, 22). All remaining documents within the A-76 process rely on what is written in the PWS (to include the Private Sector bid, MEO, and transition plans, used to complete the transfer of the function once the service provider is determined). Therefore, it is imperative the information contained within the PWS is accurate because a successful A-76 program relies on the quality of the PWS. The PWS includes information on the requirements, performance measures and standards, workload, and conditions of performance for the service being reviewed (OMB-3, 2001, 13). The PWS is written to emphasize results rather than dictating how a service provider must perform the service; a PWS should be performance-oriented. Some key areas resulting from a quality PWS should be:

maximized performance, maximized competition and innovation, maximized accountability by allowing service provider to be responsible for process, reduced risk, increased efficiency and effectiveness, simplified contract administration through implemented performance measurement; all of which can be accomplished through the collection of data, analysis of data, and documentation of appropriate data (USDATL, 2000, 22). To determine if any of the key areas are improving, data must be collected prior to the transfer to the service provider and must be continually tracked after the service provider assumes control of the function.

Collecting and analyzing data are important components when designing the requirements for the PWS because the correct data must be collected and properly analyzed to offer significant information to provide and potentially improve the service of the function that is being considered for contract. Also, data improperly documented will not provide accurate information on the improvement in results. Therefore, it is vital to take time to plan for the development of the PWS.

Developing a PWS

The four steps taken to develop the PWS can be seen in Figure 2 and each step will be outlined in the following four sub-sub-headings.

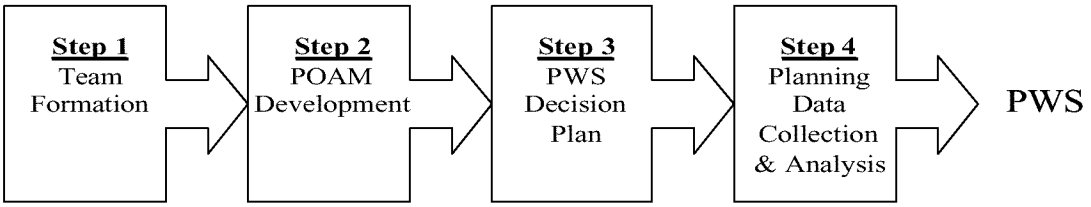

Figure 2. PWS Development
(adapted from USDATL, 2000, 26)

Team Formation

Step 1 is the formation of a team to develop the PWS. When creating a PWS, a team manager should choose the most qualified and experienced personnel to be on the team (USDATL, 2000, 26). The team should be comprised of personnel from the functional office, the contracting office, and the management analysis office (USDATL, 2000, 27). Positions within the PWS team include a team leader, subject matter experts, contracting officer, management analysts, and editors. The PWS team leader has authority over developing the PWS. The subject matter experts are the functional area experts that identify the service required of the service provider and make recommendations on the acceptance and measurement of the service provided (USDATL, 2000, 27). These subject matter experts are key personnel in determining the performance requirements of the contract. One of the duties provided by the Contracting Officer while assigned as a PWS team member is to ensure the Request for Proposal (developed from the PWS) meets all the requirements of a contract document as stated in the Federal Acquisition Regulation (FAR). The management analysts perform additional

data collection and typically are consultants or in-house resources (USDATL, 2000, 27). Finally, the editors help to edit and format the final document.

Plan of Action and Milestone (POAM)

Step 2 of the PWS planning is the development of the Plan of Action and Milestone (POAM). The POAM summarizes the actions to be taken in developing the PWS and establishes milestones for completion of the actions (USDATL, 2000, 29). The POAM outlines the steps to a typical PWS development up to 150 days. Within the 150 days, Day 22 through Day 73 involve the development of performance outcomes and measures and an example can be seen in Table 1, *Determination of performance outcomes and measures.* The entire 150 day POAM can be found in Appendix A. Day 22 through Day 73 are critical to the development of the PWS and account for 34% of the days to develop a PWS. The two categories listed emboldened in Table 1, *Identifying Activity Goals* and *Developing Performance Measures*, are the two major categories for performance measurement, and the remaining steps are subsets of the major categories.

Table 1. Determination of Performance Outcomes and Measures

Action	Day
Identifying Activity Goals	**22 – 42**
Just-In Time Training on this Action	22-23
Initial Data Collection and Analysis	22 – 29
Data to Identify Activity Goals	22- 29
Other General Data to Write the PWS	22 – 29
Initial Data Analysis	22 – 31
Identification of the Purpose	29 – 36
Identification of the Goals	29 – 42
Developing Performance Outcomes	29 – 56
Just-In Time Training on this Action	29-30
Identify Additional Data Collection and Analysis	29 – 36
Performance Outcome Analysis	29 – 56
Identification of Outcome Owner	36 – 56
Verification of Purposes, Goals and Services	45 – 56

Developing Performance Measures	**36 – 73**
Just-In Time Training on this Action	36-37
Identify Additional Data Collection and Analysis	36 – 43
Select Performance Measures	36 – 73
Document Supporting Data	43 – 73
Identify Performance Measure Owner	50 –73
Document Sources and Location of Data	50 –73
Document Methodology for Completion and Management of Data	50 – 73
Identify Source of Performance Measure	50 –73
Develop Performance Standards	36 –73
Quality Standard	36-73
Timeliness Standard	36-73
Quantity Standard (Workload)	36 –73
Establish Baseline	50 –73
Verify Purposes, Goals and Outcomes	50 – 73

(USDATL, 2000, 30)

The 51 days projected for developing performance outcomes and measures indicate that performance measurements are significant in the cost comparison process and an effort must be made to properly develop them.

PWS Decision Plan

The PWS Decision Plan is a tool used to identify and mitigate any potential problems that may exist in the development of the PWS (USDATL, 2000, 31). Handbook #4 outlines the decision plan and includes six steps to help in the development of the PWS. The first step of the PWS decision plan is determining the scope of the Cost Comparison prior to developing the PWS. The scope estimates the required work to be performed by the service provider (USDATL, 2000, 32). Step two of the PWS decision plan is the forecasting of the workload. Step three of the PWS decision plan addresses the availability of performance measures and standards, and historical workload data. If performance measures and standards are not available and historical data are non-

existent, more effort and time will be required to develop the performance measures and standards (USDATL, 2000, 32). Step four of the PWS decision plan identifies the length of the contract, typically a one-year contract with four optional years (USDATL, 2000, 33). Step five of the PWS decision plan involves deviations and waivers from current directives. This step is related to process improvement and innovation practices sought after by the Cost Comparison process (USDATL, 2000, 33). Finally, step six of the PWS decision plan is identifying potential surveillance methods (USDATL, 2000, 33). The identified surveillance methods are critical in evaluating if the Government is obtaining sustained or improved performance from the service provider.

Planning Data Collection and Analysis

The final step in the PWS development is the planning for the collection of data. It is important to think of what data will be required in the PWS for evaluation purposes, how the data will be used, and who will provide the data most efficiently (USDATL, 2000, 34). The data typically required of a PWS focuses around the historical workload of the function. The historical workload data will identify function activities, purposes, and goals. For example, a facilities maintenance function relies heavily on a maintenance file system that identifies work requirements and where resources have been focused. If the facility maintenance function were to be competitively sourced, data would need to be obtained to identify the amount of work expected (to be written in the solicitation), and what kind of work is accomplished. The facility maintenance personnel would look to obtain the historical data from their maintenance file system. When the historical data

are interpreted properly, a quality PWS can be written which leads to improved performance (outcomes) of the commercial activity.

PWS Format

To promote quality and consistent PWS documents, Air Force Instruction (AFI) 63-124 establishes guidelines for the format of the PWS. The PWS includes: a Description of Services, a Service Delivery Summary (SDS), Government-Furnished Property and Services, and General Information (SAF-2, 1999, 6). The SDS is required in every PWS and is the critical section of the PWS because it identifies the performance objective (service required of the service provider) and performance threshold (specific standard for which the service provider will be held accountable) of each task within the PWS.

The SDS portion of the PWS will be used in this research effort to identify the various differences in the performance measures and standards from base to base. An example of a portion of the information found within a SDS can be seen in Table 2, *Service Delivery Summary Example*, which was extracted from a civil engineering squadron PWS template provided on the Air Force Civil Engineering Support Agency (AFCESA) website.

Table 2. Service Delivery Summary Example

Performance Objective	SOW para.	Performance Threshold
Treat customers politely, cheerfully and promptly	1.1.1	Customer service rating of at least 4.0 on a 5.0 scale
Respond to and complete emergency, urgent, and routine service calls	1.1.3.	95% of required time limits
Maintain, repair, construct, and operate the supporting infrastructure ensuring cost effective and reliable support	1.2.	100% of time

Provide economical maintenance, repair, construction, installation, operation, and service functions for real property, Real Property Installed Equipment (RPIE), and designated Equipment Authorized Inventory Data (EAID)	1.3.	95% of scheduled inspections and/or work completed on time

Table 2 identifies the performance objective to be completed by the service provider. It identifies the "what" of a task. The table also identifies the paragraph of the PWS or SOW where the requirement can be found. Each requirement has a specific location within the PWS or SOW and is typically identified by chapter numbers, followed by paragraph and sub-paragraph numbers. For example, Table 2 contains a performance objective stating the service provider must "treat customers politely, cheerfully, and promptly", which can be found within sub-paragraph one, of the first paragraph of Chapter one of the particular SOW. Finally, Table 2 establishes the threshold value to which the service provider will be held accountable. The information contained in the performance threshold should not dictate to the service provider "how", but establish the threshold of performance that will be measured (the results of the task). The SDS portions of the PWS documents provide the minimum performance required of the service provider, which are evaluated in this research effort.

Quality Assurance Surveillance Plan (QASP)

The Quality Assurance Surveillance Plan is a vital document for the oversight of the performance for the service provider. The QASP links the written standards of the PWS to the performance of the provider. The document describes the inspection methods that will be used, the necessary reports written by quality assurance personnel and the resources (i.e., number of personnel) and estimated work hours used in the oversight of

the contract (USDATL, 2000, 22). The QASP is written to assist the contracting officer's performance evaluation of the service provider and defines the process by which the Government will evaluate the performance of the service provider and evaluate the compliance of the service provider with PWS standards (USDATL, 2000, 23). The document contains the frequency, purpose, and method of each inspection, along with the penalties of not meeting the performance standards listed within the PWS. The QASP may or may not accompany the PWS when the solicitation package is submitted, but it must be implemented regardless of who wins the Cost Comparison (USDATL, 2000, 23).

The QASP is developed by the Business Requirements Advisory Group (BRAG), which is established by the contracting officer and is a customer-focused multifunctional team (SAF-2, 1999, 2). The BRAG is established to plan and manage service contract outcomes to the satisfaction of its customers throughout the life of the requirement (SAF-2, 1999, 2-10). The BRAG is not to be confused with the PWS team previously mentioned in the *Team Formation* section. The BRAG has an entirely different function, but may contain some of the same personnel as the PWS team. Once the PWS team has developed the PWS, the team is disbanded; the BRAG then imposes surveillance requirements to the SDS (from the PWS), resulting in a QASP that is identical to the PWS SDS except for the surveillance requirements. An example of a portion of a QASP can be seen in Table 3, *Quality Assurance Surveillance Plan Example*. The information in Table 3 was obtained from a civil engineering squadron QASP template also found on the AFCESA website. It is interesting to note, the template given did not contain the required surveillance information and therefore, Table 3 is identical to Table 2, *Service Delivery Summary Example*.

Table 3. Quality Assurance Surveillance Plan Example

Performance Objective	SOW para.	Performance Threshold
Treat customers politely, cheerfully and promptly	1.1.1	Customer service rating of at least 4.0 on a 5.0 scale
Respond to and complete emergency, urgent, and routine service calls	1.1.3.	95% of required time limits
Maintain, repair, construct, and operate the supporting infrastructure ensuring cost effective and reliable support	1.2.	100% of time
Provide economical maintenance, repair, construction, installation, operation, and service functions for real property, Real Property Installed Equipment (RPIE), and designated Equipment Authorized Inventory Data (EAID)	1.3.	95% of scheduled inspections and/or work completed on time

Several bases have varying formats of the QASP. QASP formats usually have the objective and performance standard or threshold columns (as shown in Table 3), but two additional columns are often added to the QASP format: one column to identify the surveillance method that will be used to oversee the service provider (as required in AFI 63-124) and another column identifying incentives if the performance requirements are met. Surveillance methods can include customer comment cards, 100% inspections, or random inspections. The incentive column has varying percentage amounts listed if the performance requirement is met. For example, if a service provider met a requirement for submitting reports, a maximum payment percentage of 2.0 would be awarded to the service provider. Table 4, *Additional QASP Format,* identifies a portion of an additional QASP format used. The incentives column was added with sample data to depict what a QASP may look like if it contained an incentives column. The values found in the incentives may range from one to five percent, and not all standards or metrics would have a value in the incentives column.

Table 4. Additional QASP Formats

Objective	Performance Standard	Method of Surveillance	Incentives (Max pay % for meeting performance requirement)
Contractor provided quality control	Maintain a quality control plan at a level that minimizes customer complaints.	Periodic review of customer complaint and follow-up documentation.	2%
Civil Engineering (J-1, 2.0 – 1)	100% of taskings shall meet established suspenses with no more than 5% requiring correction.	Review monthly metric(s) and customer complaint.	2%
Infrastructure (J-1, 2.1 – 1)	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	2%
Infrastructure (J-1, 2.1 – 2)	Pest Control Services: Develop and comply with the IPM Plan, approved by the government. Plan developed, submitted, and approved on time. Record daily pesticide usage and report usage quarterly to ACC. Reduce yearly pesticide consumption 50% in compliance with 1993 DOD baseline study.	Review quarterly metrics.	2%

(adapted from Offutt AFB QASP, 2001, 4)

One difference between Table 4, *Additional QASP Format,* and Table 3, *Quality Assurance Surveillance Plan Example*, is that Table 4 contains the information for locating the performance objective within the objective cell. For example, the objectives for infrastructure can be found in section J-1 of the PWS. The "2.1" identifies the specific paragraph and the "-1" identifies the first objective for infrastructure. "J-1, 2.1-2" is the second objective for infrastructure found in Section J-1, paragraph 2.1. Together, the PWS and the QASP documents contain the information used in the measurement of performance within the competitive sourcing process.

Performance Measurement

This section will identify the importance of a performance measurement program and stress the significance of metric design. Relevant metric design literature will outline what a metric should include to properly evaluate a function followed by an introduction to two performance measurement programs used by the Government to evaluate performance.

Creating Performance Metrics

The performance standards and performance measures that are created form the basis of the measurement program used to evaluate the task. The performance standards are the objectives being sought by the task, and the performance measures are the metrics used to measure the results of the task. Managers use measurement programs to inform their people about the processes of the organization (Edberg, 1997, 33). Key elements within the measurement program are specific, quantifiable performance metrics; metrics are quantitative values obtained by measuring certain characteristics of a process (Edberg, 1997, 33). For example, Table 3, *Quality Assurance Surveillance Plan Example* contains the "respond to and eliminate service calls" standard, which is measured by the number of service calls received and the number of service calls completed within the specified time frames (typically found in the PWS). The resulting metric is then used to evaluate the process to determine if process improvements can be made. The response and completion time standards (established by the Emergency, Urgent, or Routine classification found within AFI 32-1001) and the metric to measure the response (may

include a record of the number of calls, classification of each call, time to respond to each call, and time to complete work) create the measurement program for that particular task.

Problems have arisen when developing a metric because the metric may have, for example, sought the wrong data or the metric may have been confusing or not quantifiable. An example of a metric that is not quantifiable would be if the standard stated "Operate, maintain, and repair the heating system" with a threshold of 100% of the time. The "operate, maintain, and repair" tries to include too much into the one metric and is very broad. It is not understandable to operate, maintain, and repair 100% of the time.

To help eliminate the problems with initiating a measurement program, a nine-step guideline has been established by the Department of Energy. The steps of this process are depicted in Table 5, *Steps to Creating a Performance Measurement Program*. The steps include identifying all organizations affected by the task and determining all requirements; establishing standards, metrics and a collection procedure; and reviewing the performance and identifying improvement opportunities.

Table 5. Steps to Creating a Performance Measurement Program

Steps	Purpose
• Involve all affected organizations in the development of performance metrics	Ensure that all affected organizations will accept the results of the effort
• Flow chart the applicable process • Determine what is important to the customer	Identify critical activities (i.e. "control points") to measure, and the results which are worthy of being measured
• Establish the performance measurements (i.e. unit of measure, sensor, and frequency) • Establish goals or standards • Identify responsible parties for data collection, analysis, and reporting	Collect the data, and ensure that the data collection process functions properly
• Analyze and report the actual performance	Determine what actions should be taken in response to a variance. It may be appropriate to:

• Compare actual performance with standard or goal • Evaluate causes of variances, and potential corrective actions	➢ Ignore it (if the variance is not statistically significant) ➢ Fix it (if it is significant, or indicates an unfavorable trend) ➢ Challenge the goal (if achieving the goal would be counter-productive to more important Corporate objectives) ➢ Challenge the metric (if the metric is providing useless or hard-to-interpret information)

(Table 5 adapted from Buchiem, 2000, 311)

The "establish the performance measurements" step of Table 5, *Steps to Creating a Performance Measurement Program,* discusses the formation of metrics. The metric will be used to evaluate the function and it must be properly designed to assess the function properly. A well designed performance metric must include three elements: "1) a defined measure of unit, 2) a 'sensor' which gathers and records the raw data, and 3) a frequency with which measurements and reports are to be made" (Buchheim, 2000, 310). The response time metric in Table 3, *Quality Assurance Surveillance Plan Example* has time as the defined measure of unit. The sensor is the system that collects the information, typically the Workgroup Information Management System (WIMS), an Air Force data system. The frequency is determined at the unit level based upon the importance of the work being evaluated. The metric reporting could be on a monthly basis or a quarterly basis, but in either case, each work order response time must be tracked within the specified period.

Along with the three elements previously mentioned (a defined measure of unit, a sensor, and a frequency), the performance metric must also be: 1) understandable; not difficult to define or understand, 2) quantifiable; objective with much of the personal influence or judgment reduced, 3) cost-effective; value of information sought must

exceed the cost of data collection, 4) proven; validated to have shown a drive to improvement, and 5) high impact; collection of metrics must be worthwhile (Edberg, 1997, 37). In the "response and completion of to service calls" metric, the metric is understandable and quantifiable; it is based upon the length of time to respond and complete. The metric is also cost effective because it is not labor intensive to track down and is easily maintained (in a previously established data system, WIMS). The service call metric is proven and is high impact because it shows if the civil engineering is improving in responding to and completing the number of service calls, which also improves quality of life and sustains mission capability. The response time and completion time metric cannot be used to evaluate quality of job completed, customer satisfaction, or budgetary performance. The issuer of the solicitation must decide what aspects of the function are important and if decide if each of the areas must have their own metrics.

To summarize a well-defined metric, one must have a defined measure of unit. A defined measure of unit that is quantifiable, easily obtained and understandable to all who may collect the information. The metric must have a sensor; someone must be identified and have the ability to collect and store the data. The metric must also have a frequency in which the data will be collected and analyzed, based upon the importance and demand of the information being collected. Finally, the metric should be cost-effective, proven, and high-impact to properly assess the function.

Identifying the metrics to be used in evaluating any process is not an easy task. First, it is important to recognize critical areas that need to be evaluated. The critical areas are areas deemed important to the success of the organization and should be

focused around the mission of the organization. For example, the critical areas of the Civil Engineering Operations Flight are identified in Air Force Instruction 32-1001 and will be outlined in Chapter 3, *Methodology*.

The most useful metrics to any organization should focus on the critical areas of that organization. Therefore, there needs to be some identification of critical areas. Recent outsourcing studies in the private sector have metrics categorized within nine gauge clusters: finance/budget, customer satisfaction, work product delivered, quality, time/schedule, business value, operational service levels, human resources, and productivity (Rubin, 1997, 8-9). Table 6, *Oversight Framework for Performance Metrics,* lists and defines the nine clusters. The gauge clusters can help managers classify mission requirements into categories and then design and use metrics appropriately in the oversight of the requirements.

Table 6. Oversight Framework for Performance Metrics

Gauge Cluster	Objective
Finance/Budget	Cost management and on-cost delivery of services
Customer Satisfaction	Critical attributes that generate satisfaction with services and work products among internal business customers
Work Product Delivered	Quantifying the amount of service or work provided in a given time period
Quality	Objective and measurable aspects of quality of services and products
Time/Schedule	Critical service, product, and project time frames and the ability to deliver on-time
Business Value	Measures the outsourcing agreement's outcome attainment from the financial/shareholder view, external customer/marketplace view, organizational learning and improvement view, and internal process improvement view
Operational Service Levels	Critical service tempos, availability, and delivery of work products

Human Resources	Changes to the skill inventory and internal job satisfaction
Productivity	Efficiency of the production and delivery of work products

(Table 6 adapted from Rubin, 1997, 8-9)

The gauge clusters used in private sector outsourcing can be used as a starting point in the evaluation process to ensure the organization undergoing the competitive sourcing process is evaluating the critical areas. The gauge clusters can be applied to the performance standards and performance measures currently used in the competitive sourcing process to ensure all aspects of the functions are being assessed (i.e., financial, customer satisfaction, productivity).

By using the nine gauge clusters, the accepted process of creating a performance measurement program, and the 14 functions of the Operations Flight, which will be identified in Chapter three, one can establish an effective performance measurement evaluation system to determine if the standards and metrics found within the competitive sourcing process are properly evaluating critical areas. The information obtained may provide recommendations to improve the performance standards and metrics used in the competitive sourcing process and to identify areas insufficiently evaluated.

Government Performance Measurement Systems

The Government has previously used performance measurement programs. Two of the programs that will be discussed are the Total Quality Management (TQM) and the Government Performance and Results Act (GPRA). Each program, TQM and GPRA, will be briefly outlined in the following sections. The outlines will be followed by a

summary of how the features of these two programs, along with the information from performance metric design, will assist in this research effort.

Total Quality Management

The Air Force endorsed performance measurement with Total Quality Management (TQM). The push for TQM in the private sector began in the 1980's and the government followed shortly after and established TQM metrics through the early 1990's. The features of TQM that are focused on are: customer satisfaction, employee involvement and continuous improvement (Cohen, 1993, xii-xv). TQM was an initiative focused on improving the effectiveness and performance of the federal government (USGAO-4, 1999, 3).

Establishing performance measures to evaluate the progress made by TQM initiatives is a vital process within TQM itself. The eights steps of TQM are identified in Table 7, *Total Quality Management Steps.* As can be seen in step seven, performance measures must be established to determine improved performance. Generally, the steps involve identifying key outputs and customers, identifying process areas creating delays or defects, instituting changes, and finally measuring the results and comparing them to what the customers really desired from the process.

Table 7. Total Quality Management Steps

Step	Objective
1	Identify what processes need improving; begin with identifying customers and their needs
2	Describe the steps taken in performance of the work

3	Identify the parts of the process where defects, delays, or rework occur frequently
4	Identify the causes for the defects, delays, or rework
5	Improve process by experimenting with small-scale pilot projects
6	Based on positive pilot project results, institute new procedure
7	Continually monitor the new process to ensure it improves performance over time
8	Repeat steps 1 through 7 to continually improve processes

(Cohen, 1993, 6)

Government Performance and Results Act

As a result of the pursuit for improved efficiency and effectiveness, and to continue the concepts of TQM, the GPRA was passed in 1993. The GPRA required Government agencies to set goals, measure the performance while seeking goal, and report their results (USGAO-3, 1996, 1). Much of the goal setting and performance measurement is similar to that found in TQM. The shift resulting from the initiation of the GPRA was from staffing and activity levels to results (USGAO-3, 1996, 1). Figure 3, *Government Performance and Results Act,* displays the concept and steps taken within the GPRA to focus on results. The three main steps involve defining the mission and outcomes desired, measurement of the performance, and utilization of the performance information to improve the process. Practices 9-12, reinforcement of GPRA principles, apply throughout the use of the GPRA.

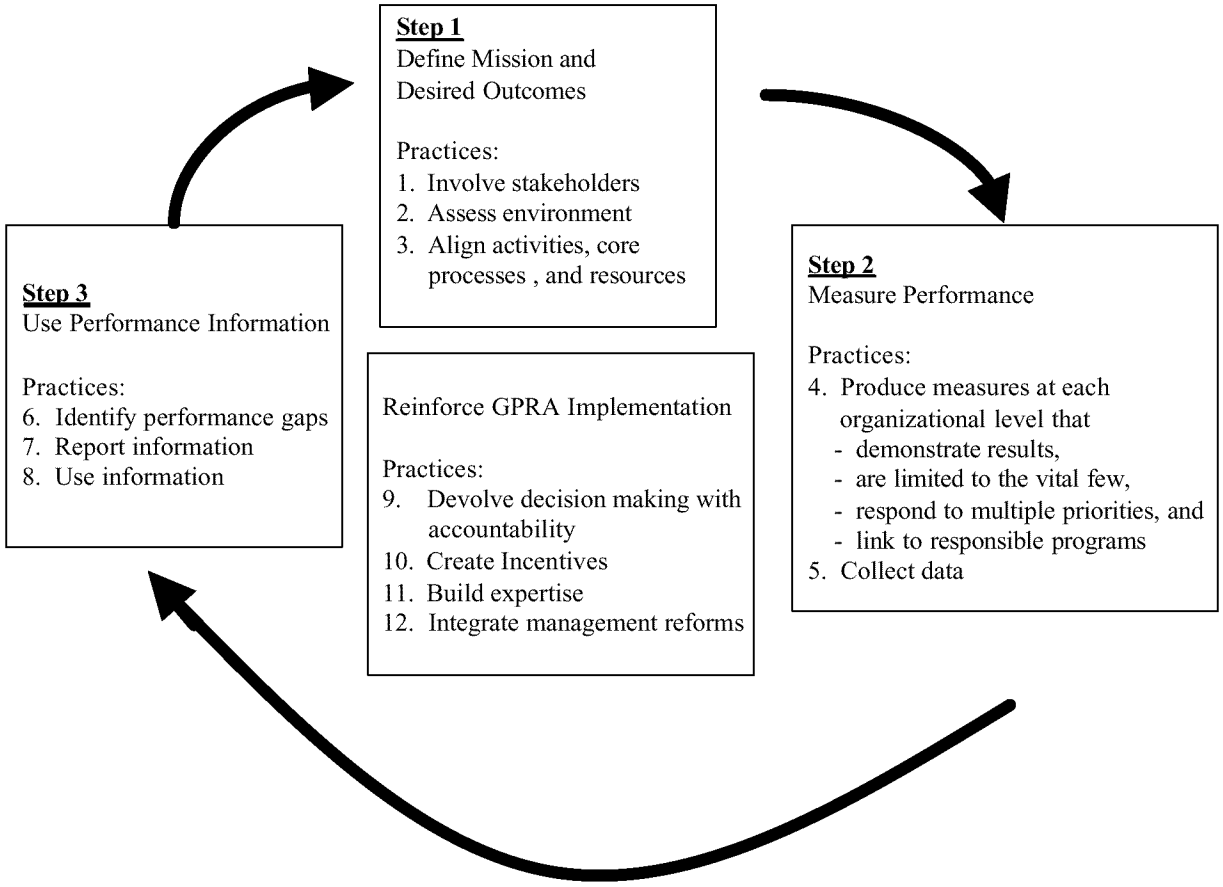

Figure 3. Government Performance and Results Act
(Adapted from Figure 1, USGAO-3, 1996, 10)

Within GPRA, four characteristics of successful performance measures were identified. The four characteristics are: demonstrate results, limited to vital few (measuring a few critical areas), respond to multiple priorities, and link to responsible programs. The characteristics are listed in Table 8, *Characteristics of Successful Performance Measures,* with their respective objectives.

Table 8. Characteristics of Successful Performance Measures

Characteristic	Objective
Demonstrate Results	"Performance measures should tell each level how well it is achieving its goals" (USGAO-3, 1996, 24).
Limited to vital few	"The number of measures for each goal at a given level should be limited to the vital few. Those vital few should cover the key performance dimensions that will enable an organization to assess accomplishments, make decisions, realign processes, and assign accountability" (USGAO-3, 1996, 25).
Respond to multiple priorities	Performance measurements must take into account all competing interests: quality, cost, customer satisfaction, stakeholder concerns, and other factors (USGAO-3, 1996, 25).
Link to responsible programs	"Performance measures should be linked directly to the offices that have responsibility for making programs work"; helps to reinforce accountability and helps managers to strive for goals (USGAO-3, 1996, 25).

The features of TQM and GPRA that will be used in this research are: identify critical areas, list the groups' objectives, key outputs, key customers, produce measurements, report information and use information. When applying TQM and GPRA, objectives and goals of the squadrons can be identified from appropriate Air Force Instructions. Next, the relevant metrics and standards that coincide with the objective and goals will be extracted from the documents and used in the evaluation. Then, the gauge clusters can be applied to the functions to determine what the major categories or clusters the function is supporting.

The features of both TQM and GPRA provide an initial insight into identifying critical mission requirements, which leads to identifying key customers and outputs, and finally, building metrics to evaluate performance. The GPRA can be used further to assess the metrics and standards; the four characteristics of the performance measures

found in Table 8, *Characteristics of Successful Performance Measures,* along with the performance measurement data in the *Creating Performance Metrics* section can be used to evaluate the extracted metrics and standards. Improperly designed standards and metrics will be identified along with critical areas not sufficiently evaluated.

Summary

This chapter has discussed the following topics: outsourcing and the A-76 process, cost comparison process, Performance Work Statements (PWS), Quality Assurance Surveillance Plan (QASP), performance metric design, Total Quality Management (TQM), and the Government Performance and Results Act (GPRA). Chapter 3, *Methodology*, will provide the steps taken in identifying the metrics and standards to be used in the evaluation and will also identify the steps taken to create the evaluation system used to evaluate the metrics and standards.

3. METHODOLOGY

This chapter introduces the competitive sourcing efforts within the Air Force and then focuses on the competitive sourcing efforts specific to civil engineering. The Objectives of the Civil Engineering Operations Flight are introduced along with metrics currently used to evaluate the performance of the Operations Flight. An introduction is then given to the methodology used to collect and evaluate the performance standards and metrics used by the Air Force in competitive sourcing efforts. The chapter begins by discussing the competitive sourcing efforts specific to the Air Force and then focuses specifically on Air Force Civil Engineering, followed by an outline of the criteria used in selecting the Air Force bases for this research effort. The PWS and QASP templates are introduced, as is a general outline of the information collected in the evaluation of performance standards and metrics. Then the steps to create the performance standard and metric evaluation system are outlined, leading to an established evaluation system used in this research effort.

Air Force Competitive Sourcing Efforts

The Air Force has conducted 1,433 competitive sourcing competitions since 1979, resulting in a reported savings of over $10 Billion and a manpower reduction of over 38,661 Full Time Equivalents (FTE), which is normally comparable to one employee (AFMIA-2, 2001, n. pag.). Because of the large volume of competitive sourcing activities within the Air Force, it was decided that the Air Force competitive

sourcing efforts would provide a sufficient number of documents to evaluate and would also provide enough diversity within the standards and metrics. Therefore, not all Department of Defense agencies were used for this research effort. Also, only Air Force documents were used because they are similar to one another; reducing the confusion from documents obtained from other Government agencies. The language used in the Army, Navy, and Marine Corps documents varies slightly (for instance, Direct Scheduled Work and the work order process are specific to the Air Force) and each service has separate data collection and storage systems, therefore, for simplicity, only Air Force documents were used. Some of the Air Force commercial activities initiatives include: civil engineering, range operations, communication functions, personnel services, software programming, supply and transportation, transient aircraft maintenance, airfield maintenance, and food services.

Air Force Civil Engineering

As of March 2001, of the 1,433 Air Force competitions, the civil engineering field had 35 commercial activity initiatives in-progress (a service provider has not yet been selected) and 461 commercial activity initiatives completed (the selected service provider is either MEO or private sector contractor). The civil engineering commercial activity initiatives include: family-housing maintenance, refuse collection, paint shop, facility maintenance, utility maintenance and operation, site maintenance, to list a few.

The Air Force Civil Engineering field was the focus in this study because many of the civil engineering (CE) activities have been classified as a commercial activity and have been identified as competitive sourcing candidates. The CE field was the only field

evaluated in this effort to reduce complications of evaluating across numerous fields (e.g., communications and maintenance). From the list of all Air Force CE competitive sourcing efforts, the larger efforts (defined in the *Scope of Contract* section) were selected because of the large effort involved in establishing the PWS and QASP. The larger competitive sourcing efforts included CE as a whole unit and not just specific areas from within CE (e.g., paint shop or material control). An assumption used in selecting bases is that the larger efforts at some of the bases may have involved more ingenuity and creativity when developing the PWS or QASP. This ingenuity and creativity may lead to significant differences between the bases selected. CE is also key for the quality of life issues around an Air Force base (e.g., facility maintenance). To ensure quality of life improves and mission is sustained within the Air Force, CE was chosen by this effort as a representative for all Air Force competitive sourcing efforts.

Civil Engineer Operations Flight

Many of the civil engineering competitive sourcing efforts by the Air Force include the Operations Flight of the Civil Engineer Squadron. The Operations Flight is one of the eight flights found within the Civil Engineer Objective Squadron as established by AFI 38-101, *Air Force Organization*. The primary responsibilities of the Operations Flight are to: "ensure Air Force installations can support the mission, maintain real property facilities, and develop and implement programs to improve the livability of our base community" (DAF-2, 1999, 1). The Operations Flight is tasked with fourteen functions, identified from AFI 32-1001 and listed in Table 9. Table 9 lists

the function identification as it appears in AFI 32-1001, the function itself, and then a brief reference name to be used for the remainder of the research.

Table 9. Civil Engineer Operations Flight Functions

Function ID	Function Objective	Reference Name
1.1	Operate, maintain, repair, construct, and demolish Air Force real property and real property installed equipment (RPIE) to accomplish the mission in the most timely and economical manner	Operate, maintain, and repair
1.2	Provide trained personnel and technical expertise to support Air Force operations worldwide	Trained personnel
1.3	Maintain capability to respond to and eliminate any emergency condition 24 hours a day	Emergency response
1.4	Conduct all activities in compliance with applicable environmental, fire and safety laws, codes, and directives	Compliance
1.5	Provide reliable, cost-effective utilities to meet readiness requirements, satisfy installation needs, and maintain quality of life	Reliable utilities
1.6	Provide base support services (i.e., pest control, grounds maintenance, snow removal)	Base support
1.7	Establish quality standards and feedback mechanisms to assess performance in meeting mission requirements and customers' needs	Quality standards
1.8	Establish a system to provide customers the capability to accomplish work requirements using their own resources	Self help
1.9	Develop and annually update future plans for major work requirements (roofing, pavements, protective coating)	Future plans
1.10	Effectively allocate in-service resources, including people, facilities, equipment, and vehicles to meet mission and customers' needs	Allocate Resources
1.11	Provide customers with the costs of work or services performed on their facilities	Provide costs to customers
1.12	Maintain a time and material accounting system to collect and report the cost of doing business	Time and material accounting
1.13	Provide effective logistics support	Logistics support
1.14	Provide an effective facility manager program	Facility manager program

(DAF-2, 1999, 2)

The fourteen functions listed in Table 9 are critical to the conditions of the facilities, quality of life initiatives, and continuation of the Air Force mission and will be used in this research effort to identify critical areas not evaluated by current PWS standards and QASP metrics.

Three major programs within civil engineering exist to support the fourteen Operations Flight functions: the Planned Work, the Direct Scheduled Work (DSW), and Recurring Work Program (RWP). The planned work program requires detailed planning and is broken into 4 priorities: priority 1 is mission (would reduce mission capability if not accomplished), priority 2 is safeguard life and property (work needed to provide secure work areas or reduce safety hazards), priority 3 is support (support of mission of prevention of a breakdown), and priority 4 is necessary (does not qualify for a higher priority) (DAG-2, 1999, 5).

Unlike the planned work program, the DSW program generally does not require much planning and consists of 3 work classifications: emergency (eliminate emergency condition within 24 hours), urgent (work completed within 7 calendar days after receipt of materials), and routine (work completed within 30 days of identifying the requirement or receipt of the material) (DAF-2, 1999, 5). And finally, the RWP "applies to real property, RPIE, or systems and equipments maintained by the Base Civil Engineer. Recurring work consists of operations, recurring maintenance, service work, and other recurring work for which the scope and level of effort are known without an earlier visit to the job site each time the work is scheduled" (DAF-2, 1999, 5). Each of these programs (RWP, planned work, and DSW) is significant to quality of life of personnel and to the success of the Air Force mission.

Civil Engineering Metrics

Within the civil engineering career field, metrics were established as early as 1980 to track performance of civil engineering squadrons. AFCESA, the civil

engineering support agency, has a listing of civil engineering metrics categorized by their respective flights. Table 10, *Subset of Metrics for Civil Engineering Operations Flight*, contains some of the metrics for the Operations Flight that have been used over the years to evaluate the Operations Flight. The complete listing of Operations Flight metrics can be found in Appendix B. Table 10, *Subset of Metrics for Civil Engineering Operations Flight*, identifies the functions that are being measured and explains what data are used in the measurement of the function. The range of values the flight must attain to meet the requirement is also identified. The range establishes an upper limit, a baseline, and a lower limit values. Values obtained from the metrics should fall within this range bound by the upper limit and lower limit if the function is operating sufficiently.

The metrics provided by AFCESA provide a foundation for the evaluation process. The AFCESA metrics may provide insight into critical areas that are currently not being sufficiently evaluated by current competitive sourcing standards and metrics. Differences and similarities between the AFCESA metrics and the competitive sourcing metrics will be highlighted and recommendations will be made using the AFCESA metrics as a foundation.

Table 10. Subset of Metrics for Civil Engineering Operations Flight

METRIC	How Measured?	Lower Limit (LL), Baseline (BL), & Upper Limit (UL)
Work Complete Emergency DSW Urgent DSW Routine DSW Measured WO	number of commitments, number completed, number of DSW backlogged	Look for trends
Open by category Emergency Urgent Routine Measured WO	number opened by category	Seek explanation of increasing number of open WO.
Completed by category	number completed by category by month	Seek explanation for decreasing number

Emergency Urgent Routine Measured WO		decreasing number of completed WOs.
DSW Responsiveness Emergency Urgent Routine	total time to accomplish work x 100% total allowed by category	LL: 90% BL: 100% UL: 110% E: 24 hrs U: 5 days R: 30 days
Work Satisfaction Emergency DSW Urgent DSW Routine DSW	number of commitments completed on time x 100% number of total commitments	LL: 60% BL: 80% UL: 100%
Scheduled Measured WOs	total number of days to complete WOs x 100% total number of days scheduled to complete WOs (estimated completion date - start date)	LL: 90% BL: 100% UL: 110%
WO life cycle (receipt to completion by category) Emergency DSW Urgent DSW Routine DSW	number of WOs in different time frequencies (0-30 days, 30-60 days, etc.) for routine and in-service DSW & WO	Look at increasing frequency of WOs within the different time periods. E: 24 hrs U: 5 days R: 30 days
Backlog Total and by Zone by category	number of WOs received *vs.* number of WOs completed	Look for explanation of increasing backlog.
Satisfaction	Questionnaire asking customers about service. Use 7-point Likert scales where 1 is bad service and 7 is good service. Use approximately 20-25 questions and have at least 1/3 of customers complete questionnaire.	LL: average of questions = 1 BL: average of questions = 4 UL: average of questions = 7

(AFCESA, 2001, n. pag.)

Civil Engineering Operations Flight Templates

The PWS templates will also be evaluated in this research. The PWS templates are also available on the AFCESA web site. The templates are available to guide bases in writing a PWS. The templates contain some standards and metrics, but each base must adapt the standards and metrics to meet its own needs. The templates will be used in the evaluation in the same manner as the AFCESA metrics. The templates also provide a

foundation for recommendations for improving the competitive sourcing metrics. The templates are a key part of this research to determine where bases have improved or declined in the quality of performance standards and metrics. The evaluation of the templates will provide information if the documents available to bases undergoing the competitive sourcing process are adequate in providing metric samples properly designed, based upon the criteria of this research.

Steps of the Research

The steps of this research are outlined in Table 11, *Steps for Evaluating Competitive Sourcing Standards and Metrics*. Table 11 consists of an objective and purpose for each step and also a column that identifies the research information (typically the literature review). The first step of this research effort is to create selection criteria to identify bases to collect the PWS and QASP documents. Step two is the data collection from the Civil Engineering Operations Flight and the creation of a table with the collected information sorted and classified according to Operations Flight Function and gauge cluster. Step three is the initial evaluation of the lines created. Those standards and metrics passing the initial evaluation proceed onto step four, the secondary evaluation. Once the evaluations are complete, step five evaluates the AFCESA templates and metrics to use as a foundation for recommendations to improve the standards and metrics. More in depth information on each of the steps in Table 11 will be provided in the following sections.

Table 11. Steps for Evaluating Competitive Sourcing Standards and Metrics

Steps	Objective	Purpose	Location within this research
1	Create base selection criteria	Identify bases to use in research	Research effort
2	Data Collection: a) Identify Civil Engineering Operations Flight critical areas based upon functions found in AFI 32-1001 b) Choose PWS standards and QASP metrics that evaluate the critical areas and create lines for evaluation. Classify lines with the specific Operations Flight Function c) Identify gauge clusters d) Create table of lines with objective, threshold, surveillance method, Operations Flight Function, and Gauge Cluster identified	a) Identify critical areas, define mission b) Combine standards and metrics into one entity to evaluate and link them to an Operations Flight Function c) The created lines are classified into clusters d) Identify varying standards and metrics	a) Ties to Table 5, *Steps to Creating a Performance Measurement Program,* Fig 3, *Government Performance and Results Act*, and Table 7, *Total Quality Management* b) Ties to *Data Collection* section c) Ties to Table 6, Oversight Framework for Performance Metrics d) Research effort
3	Initial Evaluation of lines (This step has a separate table for the evaluation, see *Primary Line Evaluation* section)	-Identify if measure of unit is defined - Identify sensor - Identify frequency - Identify if measure is quantifiable - Determine if measures are understandable - Identify if measures are high impact	Ties to *Creating Performance Metrics* section and Fig 3, *Government Performance and Results Act*
4	Secondary Evaluation of lines (This step has a separate table for the evaluation, see *Secondary Line Evaluation* section)	- Identify if objective is measured - Verify unit of measure, sensor, and frequency as in step 6 - Verify data is collected and where it is stored - If data is stored, determine for how long - Determine if measure is cost effective - Determine if results are proven	Ties to Fig 3, Government Performance and Results, Table 8, *Characteristics of Successful Performance Measures,* and Table 7, *Total Quality Management Steps*
5	a) Evaluate AFCESA Operations Flight metrics b) Evaluate AFESA Civil Engineering Operations Flight Templates	a) Provide foundation to implement changes in metrics b) Provide foundation to implement changes in metrics	a) Research effort b) Research effort

Step 1. Base Selection

Two sources were used to gather the information on bases undergoing competitive sourcing: the AFCESA web page and the A-76 Help Desk. The AFCESA web page lists all Air Force commercial activities (CA) completed or in-progress, totaling 1509 CA's as of May 2001. The A-76 Help Desk maintains a similar listing, strictly for civil engineering competitive sourcing efforts, which totals 54 as of May 2001. Together, the two sources provide a list of many bases having completed or are currently undergoing some portion of the competitive sourcing process. The listings provided names of bases, locations, MAJCOMS, contract size (or scope), and outcome of the completed efforts. 110 of the 1509 CA's were classified as Base Operating Support (BOS), Civil Engineering (CE), or Multi-Support Function (MSF) initiatives, either completed or in-progress. The other CA's were aircraft maintenance, grounds maintenance, and communications, to name a few. Ten Air Force bases were selected for this research effort from the 110 CA's that include the Operations Flight. It was felt that ten bases would supply enough variation within standards and metrics and would adequately reflect differences found within the Air Force. The ten bases were selected using 4 selection criteria. The 4 criteria are: 1) scope of contract, 2) major command the base supported, 3) location of base, and 4) outcome (MEO vs. contract or direct conversion) and are discussed below.

Scope of Contract

Many of the commercial activities are solicited together for a contract with other functions, to include the civil engineering function. Large contracts result from packaging of functions together. The packages may or may not include the following functions: civil engineering, range operations, communication functions, personnel services, software programming, supply and transportation, transient aircraft maintenance, airfield maintenance, and food services. The larger of the contract scopes are identified as BOS, MSF, or CE. The larger scope contracts were sought after in this research because the larger contracts included the entire civil engineering squadron, which ensures the entire Operations Flight is included. Some smaller contracts only have parts of the Operations Flight, for example, the paint shop or water utilities (water treatment),which are not desirable in this research. A much larger variety of metrics can be found by evaluating the entire Operations Flight. The larger scope contracts typically include civil engineering, along with some of the other functions, within the solicitation package. Multi-support function contracts may or may not include civil engineering in the solicitation package, but contain some of the other functions. A civil engineering contract contains only civil engineering in the solicitation package and is identified as large because of the number of personnel affected by the competitive sourcing outcome, typically more than 200 personnel. The three contracts (BOS, multi-support function, and civil engineering) are assumed to be the larger competitive sourcing efforts for this research effort.

Major Command

Documents from bases in each of the major commands were solicited (MAJCOMS) (to include a combined command defined later in the paragraph) to obtain a variety in standards and metrics. Each MAJCOM has different missions, requirements, and approaches to competitive sourcing resulting in the variety of standards and metrics. By obtaining standards and metrics from various commands, differences and similarities could be highlighted. The PWS and QASP documents may contain differences across the commands due to differing leadership styles during the creation of the documents.

The Air Force has 10 MAJCOMS: Air Combat Command, Air Education and Training Command, Air Force Materiel Command, Air Force Reserve Command, Air Force Space Command, Air Force Special Operations Command, Air Mobility Command, Pacific Air Command, United Air Force Academy, and United States Air Force in Europe. Each command was reviewed to determine the amount of competitive sourcing attempted within the command. Air Combat Command had much of the competitive sourcing effort due to its mission. Air Combat Command lent itself as a good competitive sourcing candidate because the support functions were not military essential and any money saved could be transferred to weapons systems. The Air Force Space Command, Air Force Special Operations Command, Air Mobility Command, Pacific Air Command, United Air Force Academy, and United States Air Force in Europe were combined into one group for this research effort (will be referred to as the "combined command" for the remainder of this research effort) because of fewer competitive sourcing efforts within these commands.

Location of Air Force Bases

The location of the bases was used as a selection criterion. Competitive sourcing efforts were selected for this research from a range of locations across the United States to capture some variance that would be expected due to geography. The locations of the bases were broken into six regions or areas as used by the Air Force Personnel Center (AFPC). Figure 4, *Location of Air Force Bases*, displays the location of all active duty Air Force bases and their respective areas used in this research. Area 4 was the only area omitted from this research simply because there were no bases passing the other three criteria found in the Area. Bases not located on Figure 4 are the Reserve bases. Two reserve bases were used in this research and are located in Area 2 and Area 3. Overseas bases were not used because of host nation agreements that may affect the competitive sourcing process.

Some variation may arise because some bases are located next to cities and some are located in rural areas. The variation of the city size is not evaluated in the selection criteria but may have an effect on the creation of the contracting documents (e.g., PWS or QASP). For instance, bases located next to large cities may have had access to many private sector businesses that have unique methods of performance evaluation. These unique methods may or may not have been adapted by the neighboring base within their competitive sourcing documents. In order to obtain all possible representations of standards and metrics, the geography of the base was used as a selection.

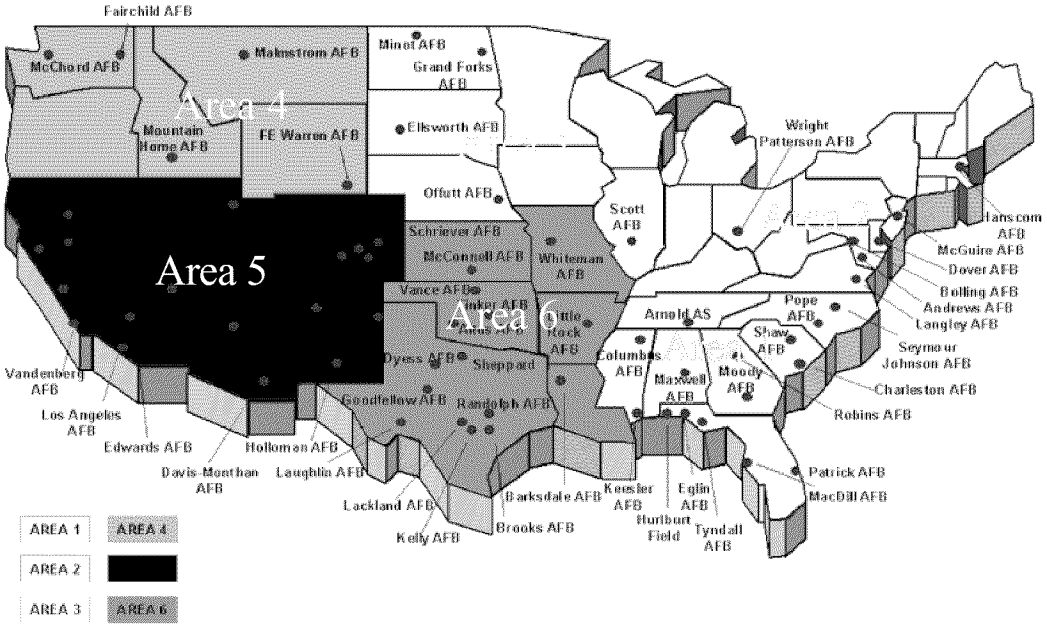

Figure 4. Location of Air Force Bases
(Adapted from AFPC, 2001, n. pag.)

Outcome of Competitive Sourcing Efforts.

Finally, competitive sourcing documents from various bases were also selected based upon the outcome of the competitive sourcing effort. The possible outcomes for the competitive sourcing considered for this research effort were: Most Efficient Organization (MEO), contractor, or direct conversion to contractor. It was decided to obtain a similar number of MEO awards as contractor awards. It was also decided to collect at least one direct conversion award to obtain a variety, and because there are fewer direct conversion awards in the Air Force, it was decided that one sample would be sufficient. Some of the civil engineering units at selected bases may still be in the cost comparison process (pre-award status), but were selected to identify changes and possible

improvements in performance standards and metrics within these newer solicitations. The planned 10 bases selected for this research provide enough diversity to adequately represent Air Force competitive sourcing documents. The standards and metrics pulled from the competitive sourcing documents will not be referenced back to the specific base from which it came, to maintain the integrity of the civil engineering unit.

Step 2. Data Collection

Once the bases were identified and the document collection was completed, a series of steps was used to collect the standards and metrics. The first step was to review the entire PWS document for a service delivery summary, a table that lists the standards of the service. This table is typically located in section two of a PWS, but can also be located in technical exhibits portion of the PWS, or in a performance management plan, which is separate from a PWS and specific to the Air Education and Training Command. The performance management plan lists the standards and metrics that the base would like measured during the contract. All standards and metrics were compiled from the performance management plan, service delivery summary, and the technical exhibits. The PWS documents ranged in size from approximately 70 pages, to over 500 pages. Once the standards were located, the QASP documents were reviewed to find the metrics that corresponded to the standards. The performance management plans, unlike the longer PWS, contained one to six pages listing the standards and metrics together.

The second step of the data collection involved three steps of assembly, 1) to assemble the PWS standard and its corresponding metric into a "line" that contains the objective, threshold, and surveillance method, 2) use Table 9, *Civil Engineer Operations*

Flight Functions to classify the lines, and 3) use Table 6, *Oversight Framework for Performance Metrics*, to further classify the lines. The lines contain the standard and metric verbatim from the PWS and QASP documents. Clarification (e.g., acronyms) on the information found within the line can be found with the lines in Appendix C. Table 12, *Line Creation, Step 1*, is an example of a standard and metric used to establish a line. The creation of the lines allow for easier evaluation of the standards and metrics.

Table 12. Line Creation, Step 1

Objective	Threshold	Surveillance
Provide Production Control that is Professional and Courteous at all times.	0 Defects. Lot is number of calls received or verbal requests taken monthly.	Customer Complaint

Table 13, *Line Creation, Step 2*, demonstrates how the example metric in Table 12 is classified into one of the 14 Civil Engineer Operations Flight Functions. The classifications of the lines into Civil Engineer Operations Flight Functions indicate what areas of the Operations Flight are evaluated and to what extent the areas are evaluated (some areas may have more than one metric measuring the area). The classification of the Operations Flight Function is based upon the information contained in the objective of the line. The classification of the Operations Flight Function is subjective and based upon the experience of the researcher.

Table 13. Line Creation, Step 2

Objective	Threshold	Surveillance	Operations Flight Function
Provide Production Control that is Professional and Courteous at all times.	0 Defects. Lot is number of calls received or verbal requests taken monthly.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide

Table 14, *Sample Line*, continues the classification of the metric in Table 13. The standard, metric, and Operations Flight Function is classified into one of the nine gauge clusters from Table 6, *Oversight Framework for Performance Metrics*. The classifications of the lines into gauge clusters determine what aspect of the Operations Flight Function is evaluated (e.g., quality, customer satisfaction, or cost). The gauge cluster classification was based upon information contained in the threshold and the objective of the line. The combination of the threshold and objective provided the direction as to what aspect was measured and what gauge cluster should be used to classify the line (i.e., customer satisfaction, quality, time/schedule). The classification of the gauge cluster is partially subjective.

Once the list of standards and metrics were extracted and classified by Operations Flight Function and gauge cluster, each of the created lines was referenced numerically for bookkeeping purposes throughout this research effort. See Table 14, *Sample Line*, for an example of the line with all categories listed for this research. Once the lines were created, they were divided into groups according to their Operations Flight Function classification.

Table 14. Sample Line

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
1	Provide Production Control that is Professional and Courteous at all times.	0 Defects. Lot is number of calls received or verbal requests taken monthly.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Customer Satisfaction

If an objective and threshold were found to contain two or more gauge clusters, for example time/schedule and quality, the one objective and threshold were broken into two separate lines, one for the time/schedule gauge cluster and another for the quality gauge cluster. This was done to reduce the confusion of how to classify the line. An example of an objective and threshold that were split into two lines is given in Table 15, *Split Objectives and Threshold.* The original objective was, "Conduct an analysis of all work orders having a 10% or greater difference between planned and estimated hours. Provide a copy of the analysis to the QAE, within one week of receipt of Work Order Variance Report." Both business value and time/schedule gauge clusters can be identified; therefore, two lines were created as seen in Table 15.

Table 15. Split Objectives and Threshold

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
23	Conduct an analysis of all workorders having a 10% or greater difference between planned and estimated hours.	1 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Business Value
24	Provide a copy of the analysis to the QAE, within one week of receipt of Work Order Variance Report	1 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/ Schedule

Standards and metrics that were site specific were not analyzed in this research. The site-specific standards and metrics are for buildings that were located only at the bases that were selected. For example, one base had a large hospital and had standards and metrics that applied strictly to it. Those standards and metrics were not included in the evaluation because this research effort seeks standards and metrics that are found Air Force wide. Other examples of standards and metrics not used in the evaluation are regarding a weather agency, ammunition storage facilities, and a headquarters building. Because these facilities are not typically found at every base, they were omitted from the evaluation.

To evaluate the lines for proper metric design, an evaluation system was established. This system was created from the various metric design literatures, features from Total Quality Management and Government Performance and Results Act, and current civil engineering metrics. The evaluation system was then applied to each of the lines.

Step 3. Primary Line Evaluation

The Primary Line Evaluation is a method established by this research to test each of the created lines to determine if the standards and metrics within the lines are properly designed. Each line created from the PWS and QASP documents was evaluated using Table 16, *Primary Line Evaluation Table*. Specific features of the performance metric design literature, the Total Quality Management process, and the Government Performance and Results Act will be identified to use in the primary evaluation. The six criteria contained in the primary evaluation step, shown in Table 16 are: 1) defined

measure of unit, 2) sensor, 3) frequency, 4) understandable, 5) quantifiable, and 6) high impact. Buchheim developed criteria 1, 2, and 3 and Edberg developed criteria 4, 5, and 6, both are discussed in the *Creating Performance Met*rics section. The six criteria tie back to TQM and GPRA because the criteria indicate that a measurement system is in place to evaluate the process (as specified by TQM and GPRA principles).

The primary evaluation system includes a "yes/no" block to identify if the researcher felt the line passed or failed the criteria ("no" indicates a fail). Finally, the evaluation system has a justification block to allow the researcher to explain the given line's success or failure for each criterion.

Table 16. Primary Line Evaluation Table

Criteria	Yes/No	Justification
Defined unit of measure?		
Sensor?		
Frequency?		
Understandable? (Not difficult to understand)		
Quantifiable? (Reduced personal influence or judgment)		
High Impact? (Affect Quality of Life, Mission, or Customer)		

Step 4. Secondary Line Evaluation

A secondary line evaluation was applied to all metric and standard lines that passed the primary evaluation. The secondary line evaluation purpose was to perform a quantitative evaluation of the metrics and standards by using specific information from the base. Representatives from the bases were asked to input information regarding all lines that passed the primary line evaluation (step 3) because certain aspects of this research were not easily accomplished by simply reviewing the lines. If a line passed the

primary line evaluation by receiving a "yes" on the six criteria, personnel from the base from which the line came from was asked to answer the questions found in the secondary line evaluation, shown in Table 17. The five criteria contained in the secondary evaluation are: 1) is objective measured, 2) where is collected information stored, 3) how long is the information stored, 4) cost effective, and 5) proven. Criteria 1, 2, and 3 are developed from TQM and GPRA, which are located in the *Government Performance Measurement Systems* section, and criteria 4 and 5 are developed from Edberg and are located in the *Creating Performance Met*rics section. Criteria 1, 2, and 3 tie back to TQM and GPRA because the criteria indicate that a measurement system is in place and is the information is used to evaluate the process (as specified by TQM and GPRA principles).

The secondary evaluation system includes a "yes/no" block to identify if the base personnel felt the line passed or failed the criteria ("no" indicates a fail). Finally, the evaluation system has a justification block to allow the researcher to explain the given line's success or failure for each criterion.

Table 17. Secondary Line Evaluation

Criteria	Yes/No	Justification
Is objective measured?		
Where is collected information stored? (Accessible to those that need information)		
How long is the collected information stored?		
Cost Effective? (Value of obtained information outweighs cost of seeking information)		
Proven? (Has shown demonstrated results)		

Table 17 was only applied to the lines that passed all six criteria found in the primary evaluation (Table 16). By evaluating the lines with Table 16 and Table 17, each

standard and metric was evaluated for proper design and determined if it was effective or not effective as found in the justification portion of the evaluations, resulting in Operations Flight functions being identified as having sufficient or insufficient performance measures.

The result of the primary and secondary evaluations will provide standards and metrics that are properly (or improperly) designed. Those standards and metrics failing some portion of the primary and secondary evaluations will be listed and reviewed to determine recommendations for improvement.

Step 5. AFCESA Operations Flight Metrics and Template Evaluations

The final step in the evaluation process was to examine the AFCESA Operations Flight competitive sourcing template and AFCESA Operations Flight metrics for positive metrics and standards that were not included in the PWS and QASP documents from the bases. The templates and metrics are accessible to all bases and were evaluated because they, 1) provided additional standards and metrics that evaluated different critical areas, 2) provided standards and metrics that were designed differently than the PWS and QASP standards and metrics, and 3) had not been previously evaluated for proper design using this research methodology. The evaluation was conducted in the same manner as it was for the 161 standard and metric lines. Each metric was listed separately and then classified according to its Operations Flight Function and gauge cluster. The primary evaluation was then applied to each metric.

Operations Flight Metrics

The important features of the Subset of Metrics for Civil Engineering Operations Flight, located in Table 10, used in this research are the metric itself and how it is measured; they provide the objective and the surveillance information. Each of the 47 metrics was evaluated to determine if current standards and metrics evaluated a critical area. For instance, the Direct Scheduled Work (DSW) responsiveness found in Table 10 evaluates the DSW responsiveness, which has been identified as a critical area. The metrics were then classified according to Operations Flight Functions and gauge clusters. The primary line evaluation was then applied to each of the 47 metrics. Critical areas lacking sufficient evaluation were identified by failed ("no" response) response to the questions from the primary line evaluation. The Operations flight metrics also provided a foundation for this research to create quality metrics to be used in future competitive sourcing efforts.

Templates

Similarly for the templates, the nine metrics were classified according to Operations Flight Functions and gauge clusters. Each of the nine metrics was then evaluated with the primary line evaluation. Critical areas lacking sufficient evaluation were identified by a failed response to a primary line evaluation question. The metrics found within the templates provided an avenue to identify areas not sufficiently evaluated in competitive sourcing efforts. The template metrics also provided a foundation for this research to create quality metrics.

Summary

This chapter outlined the methodology that was used in the standard and metric evaluation process. First, Air Force competitive sourcing efforts were introduced and then the civil engineering competitive sourcing efforts were identified as the relevant field of study. Then, civil engineering metrics and the PWS templates were discussed. The research steps were then introduced, as were the base selection criteria. Then, the creation of the performance standard and metric lines were outlined, followed by the steps for creating the primary and secondary evaluation systems. Finally, the role of AFCESA templates and Operations Flight metrics in the research was outlined. Chapter 4, *Analysis*, will detail the analysis and provide the results from the evaluation of the 161 standard and metric lines, the AFCESA Operations Flight metrics, and the AFCESA Operations Flight competitive sourcing templates.

4. ANALYSIS AND RESULTS

Chapter 4 presents the development and analysis of the lines containing the performance standards and metrics and the results from those analyses. First, a discussion of how the information was collected and categorized will be presented. Then, the primary line evaluation will be presented in the Primary Line Evaluation section, the secondary line evaluation will be presented in Secondary Line Evaluation section, and then the evaluation of the AFCESA metrics and templates will be provided in the Evaluation of Operations Flight PWS Templates and Operations Flight Metrics section. Finally, the 19 proposed Operation Flight metrics will be presented. In closing, the results of the evaluations will be discussed.

Information Collection

The best method to obtain the names of bases either having completed or initiated the competitive sourcing process was from the "camreports" found on the AFCESA website, which lists all completed competitive sourcing efforts (1433) and the competitive sourcing efforts which are underway (76) in the Air Force. The information is categorized in completed initiatives and initiatives-under-progress groupings. The AFCESA listing also groups the competitive sourcing efforts alphabetically by name (name of effort, family housing, grounds maintenance, supply, and so on) and by MAJCOM. Additional information on the AFCESA listing is the type of contract (BOS, Multi-support Function [MSF], or Civil Engineering [CE]), the number of affected positions, and the outcome of the contract (contractor or MEO).

During this research effort, the AFCESA website was being upgraded, therefore new data were not being input in the AFCESA listing. New or under-way competitive sourcing efforts were gathered from the A-76 Help Desk, because they maintained their separate files of civil engineering competitive sourcing efforts. The A-76 Help Desk files contained the name of the base, name of contract, number of positions affected, and a short description (when completed, in-progress, and outcome). At the time of this research the A-76 Help Desk files contained: completed initiatives (30), canceled initiatives (5), in-progress initiatives (16), and on-hold initiatives (3). Of these 54 initiatives listed by the A-76 Help Desk, only the completed or in-progress initiatives were considered for this research.

From the two listings (AFCESA web site and A-76 Help Desk), ten bases were chosen as a representative sample of Air Force competitive sourcing documents. The identification of bases included sorting by the selection criteria: Scope of Contract, Location of Base, MAJCOM, and Outcome. Table 18, *Selected Bases*, identifies the bases along with the base selection characteristics. A goal of this research was to obtain a variety of bases, and the ten bases do provide the variety based upon the selection criteria. The three scopes (BOS, MSF, and CE) are represented, each command is represented (combined command is compiled of several commands), the bases are geographically separated, and each of the outcomes is also represented.

Table 18. Selected Bases

*Note: PWS and QASP documents are highlighted in the Bibliography

Base	Scope	Command	Location	Outcome
Cheyenne Mountain	CE	Combined Command	Area 5	Contract
Goodfellow	BOS	Air Education and Training Command	Area 6	MEO
Grissom	BOS	Air Force Reserve	Area 3	Contract
Keesler	MSF	Air Education and Training Command	Area 1	Pre-award
Kirtland	CE	Air Force Materiel Command	Area 5	Direct Conversion
Maxwell	MSF	Air Education and Training Command	Area 1	Contract
Offutt	BOS	Air Combat Command	Area 3	Pre-award
Vandenberg	BOS	Combined Command	Area 5	Contract/MEO
Westover	BOS	Air Force Reserve	Area 2	Contract
Wright-Patterson	BOS	Air Force Materiel Command	Area 2	MEO

The lines that were created by the performance standards and metrics were not referenced back to the individual bases. A goal of this research was to obtain examples of metrics and standards (good or bad) and not to identify problems with specific bases.

The information for the outcome portion of Table 18 is as depicted in the AFCESA camreports. After contacting the bases, it was discovered there were some errors in the listings. For example, Vandenberg AFB was listed as having a BOS contract, but they have four separate contracts for pieces of their civil engineering unit. Two of the contracts for Vandenberg civil engineering went to contractors, while the other two went to the MEO. Due to the separation of contracts, Vandenberg does not have a BOS contract. Therefore, Vandenberg was not included in this research effort. Also, Keesler AFB had withdrawn their documents from solicitation, and subsequently, Keesler was also removed from this research effort because the documents were not complete at the time of this research. The remaining eight bases provided their PWS and QASP documents for this research.

Each of the eight PWS documents were reviewed and standards found within the Service Delivery Summary or Technical Exhibits were listed in a table. The eight QASP

documents were then reviewed to match the metrics within the documents to their respective standards to create the lines for evaluation. For Maxwell AFB, the standards and metrics were found within their Performance Management Plan. The Performance Management Plan is an effort by the Air Education and Training Command to design and enforce performance metrics. The plan details what information to collect, when to collect, and how to interpret the data. Maxwell was the only base used in this research that used a Performance Management Plan.

Created Standard and Metric Lines

There were a total of 161 standard and metric lines extracted from the 8 base documents that contained the objective, threshold, and surveillance. The 161 lines were further classified according to the 14 Operations Flight Functions and the nine gauge clusters. Table 19, *Results of the Classifications*, summarizes the numbers found in regards to the Operations Flight Functions and the gauge clusters. Table 19 lists all the Operations Flight Functions by their reference name from Table 9, Civil Engineering Operations Flight Functions, and only lists the gauge clusters found in the classifications. There are nine gauge clusters, but only seven were found during the classification of the 161 lines.

Table 19 summarizes the findings of the classifications. For example, within the 161 created lines, 38 lines were identified as Operations Flight Function 1.1, Operate, Maintain, and Repair, signifying an emphasis on this particular function by the bases that were evaluated. The Operational Service Level was the most frequent gauge cluster classification of the 161 lines. At the opposite end, there are 3 Operations Flight

Functions (Operations Flight Function 1.9, Future plans, Operations Flight Function 1.11, Provide costs to customers, and Operations Flight Function 1.14, Facility manager program) with no metric evaluations identified from the 161 lines. Also, there are only 2 and 3 gauge clusters identifying customer satisfaction and work product delivered, respectively, for the 161 lines evaluated. Areas that lack sufficient evaluation can be readily identified if there are no standards and metrics to evaluate them. Also, the increased number of metrics located within a certain area identifies areas where metrics have been concentrated.

The 161 lines with their Operation Flight Function and gauge cluster classifications can be found in Appendix C. From the 161 lines, a subset of each Operations Flight Function was created to simplify the evaluation process. Each of the lines with its primary line evaluation table (see *Primary Line Evaluation* section) can be found in Appendices D through N, divided into their Operations Flight Functions. Operations Flight Functions classified as 1.1 are found in Appendix D, Operations Flight Functions classified as 1.2 are found in Appendix E, and so on. There were no Operations Flight Functions classified as 1.9, 1.11, or 1.14, therefore, there are no appendices for them and Operations Flight Functions 1.10, 1.12, and 1.13 are found in Appendices L, M, and N, respectively.

Table 19. Results of the Classifications

Operation Flight Functions	Gauge Clusters							
	Time/ Schedule	Operational Service Level	Quality	Finance/ Budget	Customer Satisfaction	Work Product Delivered	Productivity	Total number of metrics found within Operations Flight Function Classification:
1.1, Operate, maintain, and repair	14	15	6	3	0	0	0	**38**
1.2, Trained personnel	3	19	4	1	1	1	0	**29**
1.3, Emergency response	5	0	0	0	0	0	0	**5**
1.4, Compliance	0	0	0	0	0	1	0	**1**
1.5, Reliable utilities	2	31	2	0	1	0	3	**39**
1.6, Base support	3	13	1	0	0	1	1	**19**
1.7, Quality standards	5	1	6	4	0	0	0	**16**
1.8, Self help	0	2	0	0	0	0	0	**2**
1.9, Future plans	0	0	0	0	0	0	0	**0**
1.10, Allocate Resources	0	4	0	0	0	0	0	**4**
1.11, Provide costs to customers	0	0	0	0	0	0	0	**0**
1.12, Time and material accounting	3	3	0	0	0	0	0	**6**
1.13, Logistics support	0	2	0	0	0	0	0	**2**
1.14, Facility manager program	0	0	0	0	0	0	0	**0**
Total number of metrics found within gauge cluster classification:	**35**	**90**	**19**	**8**	**2**	**3**	**4**	**161**

Primary Line Evaluation

Once the 161 lines were divided into their respective Operations Flight Functions, an evaluation was used to determine if the lines were properly designed. Using metric design, TQM, and GPRA features identified in Chapter II, a series of questions was developed: 1) is there a defined unit of measure? 2) Is there a sensor? 3) Is there a frequency? 4) Is the line understandable? 5) Is the line quantifiable? and 6) Is the line high impact? The answers to these six questions for each line is based upon information obtained from the competitive sourcing documents, and researcher knowledge of the documents. Each of the 161 lines created from the PWS and QASP documents were evaluated with the same six questions; a question resulting in a "no" answer indicated a fail, and a "yes" indicated a pass for each of the six questions. For simplicity, the evaluation questions are exclusive, if a line failed question #1 and question #3 during the primary evaluation; the line was classified as only failing question #1 and was only discussed as failing #1 (it was not discussed as failing question #3).

Of the 161 lines, 7 lines failed because there was no defined unit of measure, for example time, cost, or work order. None of the lines failed the sensor question; each line had some method identified to collect the data for the standard or metric. 31 lines failed because there was no established frequency within the line; there was a lack of a time period in which to collect the information (weekly, monthly, or yearly). 61 lines failed because they were not understandable; there was a mismatch between the objective, threshold, or surveillance. 11 lines failed because they were not quantifiable, many of the lines not quantifiable were subjective and could not have specific or rigid measurement.

Finally, 18 lines failed because they were not high impact; the lines were evaluated from the base personnel as the customer, not the MAJCOM or Civil Engineer unit.

Identification of the customer is critical in determining what is important to the Civil Engineer unit for performance measurement purpose and, for example, what is important to the MAJCOM may not be important to the customer. Examples for each of the six primary evaluation questions will be presented later in the chapter. The list of lines passing the primary evaluation can be found in Appendix O along with their respective secondary line evaluation. For the secondary evaluation, all lines were listed in Appendix O regardless of their Operations Flight classification.

The results of the primary line evaluation are presented in the next series of tables. Each of the 161 lines evaluated is contained in the tables followed by a representative example. Based upon the first step the line failed, the line ID number was placed within one of six tables established for that specific evaluation step. Each of the tables created corresponds to a particular step within the primary evaluation and each table provides a list of the line numbers that did not pass the primary evaluation according to what evaluation step failed (due to space constraints, just the ID number will be listed). For example, Table 20, *Lines That Did Not Contain a Defined Unit of Measure*, lists the seven line ID numbers of lines that did not have a defined measure of unit (question #1) along with the Operations Flight Function and the appendix where the line is located in this research. All lines passed the sensor question, Table 23, *Lines That Did Not Contain a Frequency,* lists all of the line ID numbers of lines not containing a frequency (question #3). Following each table within the series of tables, a line that

failed the specific step is presented as an example, along with the primary evaluation, and discussed in detail.

Table 20. Lines That Did Not Contain a Defined Unit of Measure

ID #	Operations Flight Function	Appendix
16	1.1	I
70	1.6	I
71	1.6	I
58	1.7	J
59	1.7	J
95	1.7	J
160	1.7	J

Tables 21 and 22 contain an example of a line that failed the first step of the primary evaluation and its primary evaluation table. The Operations Flight Function and the Gauge Cluster classifications were removed from the table because they are not needed during the primary evaluations. There is no defined unit of measure for the threshold, and the surveillance. The "maintain a professional appearance" can be found in the objective, but professional appearance is not something that has a defined unit of measure (i.e., time, cost). This example in Table 4.2 is typical of the other six lines that failed the defined unit of measure step of the primary evaluation.

Table 21. Example of a Line without a Defined Measure of Unit

ID	Objective	Threshold	Surveillance
160	The service provider will be expected to maintain a professional appearance of all sites, roads, airfield pavements, parking areas, etc. Any deviation from this professional level of service (e.g., complaints of pot holes, low areas holding water on the flightline, spalls on the airfield, accumulation of debris on streets/pavements, higher counts than threshold limits for mosquito population, etc.) will be counted as a data point in this metric. An incident is the first time that an event is brought to the attention of the service provider. A complaint is dissatisfaction with the fix or a lack of response to the incident. This metric will have two columns; one for an incident and one for complaints.		Monthly

Table 22. Primary Evaluation of Line #160

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no specified unit of measure
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to lack of specified unit of measure
Quantifiable? (Reduced personal influence or judgment)	No	Professional appearance cannot be quantified
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

Table 23 lists all the line ID numbers that failed the third step of the primary evaluation that identifies a frequency. There were a total of 31 lines that did not contain a frequency. Table 24 contains an example of a line that did not contain a frequency and Table 25 is the primary evaluation of the line example contained in Table 26.

Table 23. Lines without a Frequency

ID #	Operations Flight Function	Appendix	ID #	Operations Flight Function	Appendix
42	1.1	D	50	1.5	H
74	1.1	D	51	1.5	H
75	1.1	D	52	1.5	H
77	1.1	D	53	1.5	H
78	1.1	D	54	1.5	H
87	1.1	D	55	1.5	H
89	1.1	D	88	1.5	H
41	1.2	E	90	1.5	H
80	1.2	E	99	1.5	H
81	1.2	E	118	1.5	H
83	1.2	E	82	1.6	I
98	1.2	E	116	1.6	I
17	1.4	G	117	1.10	L
47	1.5	H	27	1.12	M
48	1.5	H	102	1.13	N
49	1.5	H			

Table 24. Example of Line without a Frequency

ID	Objective	Threshold	Surveillance
77	On-site response to urgent work orders within 1 workday	95% of the time and within 2 work days 100% of the time. If required materials are not on-hand, order required materials within 7 calendar days, 100% of the time. Mitigate condition to routine status or better within 7 calendar days after required materials are available 100% of the time.	Customer complaint.

Table 25. Primary Evaluation of Line #77

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Response time to urgent work orders
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Measures the time to respond to an urgent work order
Quantifiable? (Reduced personal influence or judgment)	Yes	Response times are recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

For a metric to be well developed, it must contain a frequency. In Table 24, *Example of Line without a Frequency,* there is not an established frequency to measure "the 95% of the time". There is no specified period of time to measure the 95% (monthly, weekly, or yearly). This is typical of all of the lines failing to have a frequency. In some cases the frequency may have been identified in the PWS, but it was not contained in the line, therefore, the line failed step 3 of the primary evaluation.

Table 26 lists all the line ID numbers that failed the fourth step of the primary evaluation that identifies if the line is understandable. There were a total of 61 lines that were found to be not understandable. Table 27 contains an example of a line that was not understandable and Table 28 is the primary evaluation of the line example contained in Table 27.

Table 26. Lines not Understandable

ID #	Operations Flight Function	Appendix	ID #	Operations Flight Function	Appendix
9	1.1	D	68	1.2	E
32	1.1	D	69	1.2	E
61	1.1	D	79	1.2	E
62	1.1	D	121	1.2	E
63	1.1	D	122	1.2	E
64	1.1	D	123	1.2	E
73	1.1	D	124	1.2	E
94	1.1	D	126	1.2	E
109	1.1	D	127	1.2	E
110	1.1	D	10	1.5	H
111	1.1	D	11	1.5	H
113	1.1	D	12	1.5	H
115	1.1	D	13	1.5	H
135	1.1	D	14	1.5	H
137	1.1	D	15	1.5	H
138	1.1	D	100	1.5	H
101	1.5	H	84	1.6	I
112	1.5	H	104	1.6	I
119	1.5	H	105	1.6	I
120	1.5	H	106	1.6	I
125	1.5	H	107	1.6	I
130	1.5	H	108	1.6	I
131	1.5	H	114	1.6	I
132	1.5	H	160	1.7	J
133	1.5	H	129	1.8	K
134	1.5	H	153	1.10	L
139	1.6	I	25	1.12	M
43	1.6	I	128	1.12	M
44	1.6	I	103	1.13	N
46	1.6	I			
57	1.6	I			
28	1.8	K			

Table 27. Example of Line Difficult to Understand

ID	Objective	Threshold	Surveillance
69	Work Order Execution: Complete approved work orders (between 50 to 250 man-hours) within 10% of approved cost.	Timely resolution 95% of the time, measured on a monthly interval.	Periodic monitoring of 20-40% of approved work orders, customer complaints

Table 28. Primary Evaluation of Line #69

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	There is a mismatch between the Objective (cost) and the threshold (time)
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

The line found in Table 27 provides an example of a line that is not understandable. The objective measures cost and the threshold identifies timely resolution. There is a mismatch between the threshold and the objective. Table 29 and Table 30 offer another example of a metric that was difficult to understand.

Table 29. Additional Example of Line Difficult to Understand

ID	Objective	Threshold	Surveillance
15	Operate, maintain, and repair mechanical systems to ensure temperatures/ humidity to the mission critical centers are within mission equipment parameters. *(*mission critical item*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)

Table 30. Primary Evaluation of Line #15

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable?(Reduced personal influence or judgment)	No	Because the objective of ensuring humidity/temp parameters cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

The line found in Table 29 was rejected because the objective was too broad. There are too many parameters in the objective to be accurately measured by the surveillance found in Table 29. By being so broad, the objective is difficult to understand what is being measured.

Table 31 lists all the line ID numbers that failed the fifth step of the primary evaluation that identifies if the line is quantifiable. There were a total of 11 lines that were found to be not quantifiable. Table 32 contains an example of a line that was not quantifiable and Table 33 is the primary evaluation of the line example contained in Table 32.

Table 31. Lines not Quantifiable

ID #	Operations Flight Function	Appendix	ID #	Operations Flight Function	Appendix
66	1.1	E	56	1.5	H
1	1.2	F	60	1.7	J
2	1.2	F	146	1.7	J
4	1.2	F	24	1.12	M
18	1.2	F	26	1.12	M
29	1.2	F			

Table 32. Example of Line not Quantifiable

ID	Objective	Threshold	Surveillance
1	Provide Production Control that is Professional and Courteous at all times.	0 Defects. Lot is number of calls received or verbal requests taken monthly.	Customer Complaint

Table 33. Primary Evaluation of Line #1

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Professional and courteous personnel
Sensor?	Yes	Customer records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Professional and courteous personnel
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment is not reduced. Professionalism and courtesy are subjective to customers' perception
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers

Table 31 provides an example of a created line that is not quantifiable because of the amount of personal judgment involved with classifying professional and courtesy and is typical of the remaining 10 lines found in Table 30. The customer defines professional and courteous based upon the situation. If the customer perceives an employee is not professional or courteous under some circumstance during the interaction process, the customer will not rate the employee as professional and courteous, even if the employee felt as if the situation was handled properly. Because of this, the professional and courteous aspect of the work cannot be quantified because it changes from customer to customer.

Table 34 lists all the line ID numbers that failed the sixth and final step of the primary evaluation that identifies if the line is high impact. There were a total of 18 lines that were found to be not high impact. Table 35 contains an example of a line that was not high impact and Table 36 is the primary evaluation of the line example contained in Table 35.

Table 34. Lines not Classified as High Impact

ID #	Operations Flight Function	Appendix	ID #	Operations Flight Function	Appendix
8	1.2	E	93	1.5	H
19	1.2	E	85	1.6	I
20	1.2	E	86	1.6	I
37	1.2	E	147	1.7	J
38	1.2	E	148	1.7	J
39	1.2	E	149	1.7	J
40	1.2	E	21	1.10	L
96	1.2	E	22	1.10	L
97	1.2	E			
92	1.5	H			

Table 35. Example of Line not Classified as High Impact

ID	Objective	Threshold	Surveillance
21	Ensure sufficient number of 2-way radio batteries are adequately charged to keep all CE radios operational at all times	0 Defects Lot is number of radios in CE during the month.	Checklist

Table 36. Primary Evaluation of Line #21

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of batteries
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Ensures batteries are adequately charged
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of radios not used due to insufficient batteries
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

Table 35 identifies a line that is not classified as high impact. To ensure 2-way radios have charged batteries is an aspect that is internal to the service provider. It is agreed that if batteries are not charged, customers and work to be accomplished will suffer, but the line evaluates an issue that is administrative. Therefore, it is classified as not being high impact and is representative of the other 17 lines listed in Table 34.

Some of the lines passed the primary line evaluation but were not evaluated further because the Civil Engineer unit does not or has not begun to use the standards and metrics. Of the remaining 33 lines that passed the primary evaluation, eighteen lines (line ID Numbers: 76, 91, 140, 141, 142, 143, 144, 145, 150, 151, 152, 154, 155, 156, 157, 158, 159, and 161) were not further evaluated because the bases had not implemented the service provider at the time of this research. They were eliminated from the secondary evaluation because the secondary evaluation involved collection of data and storage of data, which does not currently take place at the bases from where the 18 lines were collected. Also, eight lines (line ID Numbers: 3, 23, 30, 31, 33, 34, 35, 36) were not evaluated because the base where the lines were obtained from uses command metrics for evaluation, not the QASP. The 26 lines not evaluated further are listed in Appendix O but there will not be a secondary evaluation table with them. There is a discussion in the

results section regarding bases not using QASP documents. Within the 26 lines not evaluated by the secondary evaluation, the majority of the Operations Flight Functions (65%) were found in the 1.1, Operate, Maintain, and Repair, and 1.7, Quality Standards. Also, a majority of the gauge clusters (65%) were categorized as quality or time/schedule. The seven lines that passed the primary evaluation will be discussed in the *Secondary Line Evaluation* section. The following section outlines the steps taken to further evaluate the seven lines that passed the primary line evaluation.

Secondary Line Evaluation

The purpose of the secondary evaluation was to provide a quantitative evaluation of the standard and metric lines that passed the primary evaluation. The secondary evaluation consisted of specific information obtained from the respective bases. The secondary line evaluation was similar to the primary with a list of five steps to evaluate each of the seven lines. Because the researcher could not adequately evaluate the steps, the bases from which the standards and metrics came were contacted to further assist in the evaluations. The five steps used in the secondary evaluation were: 1) Is the objective measured? 2) is the collected information stored? 3) How long is the collected information stored? 4) Is the line cost effective?; and 5) Is the line proven to show results? The five questions of the secondary evaluation were applied to each of the seven lines that passed the primary evaluation. The entire list of lines that underwent the secondary evaluation can be found in Appendix O along with their respective secondary evaluation table. Appendix O also contains the 26 lines that passed the primary

evaluation but are not included in the secondary evaluation steps. Table 37 lists the line ID numbers of the lines that passed the primary evaluation.

Table 37. Lines Used in the Secondary Line Evaluations

ID #	Operations Flight Function	Appendix
7	1.1	D
67	1.1	D
5	1.3	F
65	1.3	F
45	1.6	I
72	1.6	I
6	1.7	J

Six of the seven lines involved in the secondary evaluation passed the five step secondary evaluation; one is displayed in Table 38, and its corresponding secondary evaluation in Table 39 (all information used to complete the secondary evaluation tables was obtained from phone interviews with the respective base personnel).

Table 38. Example Line Passing the Secondary Evaluation

ID	Objective	Threshold	Surveillance
5	Emergency Work Requests: 30 minutes (duty hours)/1 hour (non-duty hours); completed (safed) in 24 hours.	100% of the time	Records Review or Customer Contact, at least 1/week

Table 39. Secondary Evaluation of Line #5

Criteria	Yes/No	Justification
Is objective measured?	Yes	By contractors telling QAE he will not make the required time
Where is collected information stored? (Accessible to those that need information)		IWIMS
How long is the collected information stored?		1 year
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	Very little cost involved
Proven? (Has shown demonstrated results)	Yes	If the work request is not completed in specified time, the QAE questions the service provider and initiates closure as close to the specified time as possible

Each of the six lines passing the secondary evaluation is similar to the example line given in Table 38 because they all involved a service to the base (work order and base services). Each standard and metric is measured or tracked. The only difference between the standards and metrics is where the information is stored. Some have IWIMS for data storage and others use records or logs for the information. The data for the six standards and metrics is kept for a year, which will be further discussed in the *Results* section. The standards and metrics are very cost effective because the data are stored in systems that have already been established (IWIMS or logs) and a QAE ensures the work is accomplished. The standards and metrics are proven because the service provider understands that if the work is not completed by the timeline, customer complaints will begin and the service provider may have to add the work to what is already been scheduled for the next week or month, which may result in a backlog of work or having personnel work extra hours. Therefore, by knowing the information is collected, it is in the best interest of the service provider to complete the work in the required time as stated in the lines (or PWS). Table 40 and 41 provide an example of the line that did not pass the secondary evaluation.

Table 40. Example Line not passing the Secondary Evaluation

ID	Objective	Threshold	Surveillance
72	Refuse Collection: Collect and dispose of waste (After contractor assumption of tasks Oct 2001). Refuse is picked up and disposed of IAW with SOW standards and schedules.	Completed on time. Pick up schedule deviation is less than 5%, measured on a monthly basis.	Customer complaints

Table 41. Secondary Evaluation of Line #72

Criteria	Yes/No	Justification
Is objective measured?	No	Involves review of schedules if a customer complaint is validated
Where is collected information stored? (Accessible to those that need information)		No
How long is the collected information stored?		NA due to the information not being stored
Cost Effective? (Value of obtained information outweighs cost of seeking information)	No	It is not known if the line is cost effective
Proven? (Has shown demonstrated results)	No	Service provider just started in Oct of 2001

The line found in Table 40 did not pass any of the five steps within the secondary evaluation. A new service provider was just implemented (3 months prior to this research) and the information was not collected up to the time of the line evaluation. It was not known at the time of this research if the line would be cost effective or proven.

Six lines from the original 161 lines passed the primary and secondary evaluations, which indicates they were properly designed, and is supported by the quantitative evaluation. Five of the lines were work order and DSW response times (Operations Flight Functions 1.1 Operate, Maintain, and Repair; and 1.3 Emergency Response) identified as time/schedule gauge clusters and one was a pest removal service (Operations Flight Function 1.6, Base Support) identified as an Operational Service Level gauge cluster. This leaves many of the Operations Flight Functions without properly designed metrics and standards (in appropriate gauge clusters) to sufficiently evaluate them.

Evaluation of Operations Flight PWS Templates and Operations Flight Metrics

The Air Force Civil Engineering community has many guidelines to help streamline the competitive sourcing process. One of the guidelines is an Operations Flight Template found on the AFCESA website. This research reviewed the contents of the template to determine which Operations Flight critical areas are currently evaluated by the templates and if standards and metrics could be properly designed from the templates. AFCESA also has a separate list of metrics that was introduced in Chapter 3. The templates and the metrics were evaluated to determine if sufficient guidance exists to help bases undergoing the competitive sourcing process to develop standards and metrics.

The Operations Flight Function and gauge cluster classifications for the metrics found in the templates and AFCESA Operations Metrics can be found in Appendices P and Q, respectively. Each metric was extracted and classified according to its Operations Flight Function and gauge cluster. Then, the primary evaluation was applied to each of the metrics. Only the primary evaluation was used because the metrics are representative samples. The primary evaluation for each of the metrics found within the AFCESA templates and Operations Metrics can be found in Appendix R and S, respectively.

Evaluation of PWS & QASP Templates

AFCESA provides many templates for civil engineering on its website. The particular template chosen for this research was specific to the Operations Flight. Each of the standards and metrics found in the service delivery summary of the PWS template were individually evaluated in the same manner as the performance standard and metric lines. The standards and metrics found on the templates were reviewed to determine if

the templates provided are adequate in supporting the mission of the Operations Flight. It is stated on the template that the individual bases need to tailor the metrics to their specific needs. Table 42 lists the nine standards and metrics found in the Operations Flight PWS and QASP templates.

Table 42. PWS & QASP Template Standards and Metrics

ID	Performance Objective	SOW para.	Performance Threshold
T-1	Treat customers politely, cheerfully and promptly	1.1.1	Customer service rating of at least 4.0 on a 5.0 scale
T-2	Respond to and complete emergency, urgent, and routine service calls	1.1.1.1 and 1.1.3.	95% of service calls are responded to and completed timely
T-3	Maintain, repair, construct, and operate the supporting infrastructure ensuring cost effective and reliable support	1.2.	100% of time
T-4	Provide economical maintenance, repair, construction, installation, operation, and service functions for real property, Real Property Installed Equipment (RPIE), and designated Equipment Authorized Inventory Data (EAID)	1.3.	95% of scheduled inspections and/or work completed on time
T-5	Operate and maintain steam heat, hot water, chilled water, water treatment, and wastewater treatment plants	1.4.	100% of time
T-6	Provide facility and base services protecting public health and base property, which includes custodial services, refuse collection and disposal, locksmith services, pest and animal control, hazardous waste collection and disposal, snow and ice control, grounds maintenance and landscaping. Provides services in accordance with submitted plans	1.5.	Schedules are met 95% of time
T-7	Provide an effective design program and construction management to ensure projects are designed and construction work are completed timely and within budget.	1.6.	100% of time
T-8	Develop the CE Financial Plan	1.7.	100% of time
T-9	Respond to contingencies and natural disasters during normal and after duty hours within required time limits	1.8.	100% of time

Once the metrics were classified according to Operations Flight Function and gauge cluster, the classifications were sorted and summed in Table 43, *Classification of AFCESA Template Metrics*. The results of the AFCESA template evaluations were significant in that many of the metrics are improperly designed and many critical areas

are not evaluated. Table 43, *Classification of AFCESA Template Metrics*, identifies the Operation Flight Function and Gauge Clusters for the nine metrics found in the Operations Flight Template.

Table 43. Classification of AFCESA Template Metrics

Operation Flight Functions	**Gauge Clusters**								
	HR	T/S	OSL	Quality	F/B	CS	WPD	Pro	Total number of metrics found within Operations Flight Function Classification:
1.1, Operate, maintain, and repair	0	0	2	0	0	0	0	0	**2**
1.2, Trained personnel	0	0	0	0	0	1	0	0	**1**
1.3, Emergency response	0	2	0	0	0	0	0	0	**2**
1.4, Compliance	0	0	0	0	0	0	0	0	**0**
1.5, Reliable utilities	0	0	1	0	0	0	0	0	**1**
1.6, Base support	0	0	0	0	0	0	1	0	**1**
1.7, Quality standards	0	0	0	0	0	0	0	0	**0**
1.8, Self help	0	0	0	0	0	0	0	0	**0**
1.9, Future plans	0	1	0	0	0	0	0	0	**1**
1.10, Allocate Resources	0	0	0	0	0	0	0	0	**0**
1.11, Provide costs to customers	0	0	0	0	0	0	0	0	**0**
1.12, Time and material accounting	0	0	0	0	1	0	0	0	**1**
1.13, Logistics support	0	0	0	0	0	0	0	0	**0**
1.14, Facility manager program	0	0	0	0	0	0	0	0	**0**
Total number of metrics found within gauge cluster classification:	**0**	**3**	**3**	**0**	**1**	**1**	**1**	**0**	**9**

From the classification, 4 (44%) are classified as Operations Flight Functions 1.1, Operate, Maintain, and Repair, and 1.3, Emergency response. The majority (67%) of the

gauge cluster classifications are found in operational service level and time/schedule. Half of the 14 Operations Flight Functions are not evaluated by the metrics found in the template.

The application of the primary line evaluation was the next step. Each of the metrics, which can be located in Appendix P with their corresponding primary evaluation, failed the sensor and frequency portion of the evaluation. Two of the nine can be corrected by establishing an appropriate sensor and frequency. The remaining seven require changes in their design because they are very broad and encompass many aspects of a process.

The sample standards and metrics found within the service delivery summary of the templates are very broad and should not be used as they are written. They should be used as a guide to identify the areas that need to be evaluated. It must be noted that the template does state that the individual bases must write its own unique requirements and quantities. Given that, the templates are still poor in that the standards do not specify what critical areas should be evaluated. For example, T-3 found in Table 42 identifies "Maintain, repair, construct, and operate the supporting infrastructure". T-3 is an encompassing metric; it does not specify what is the critical aspect; the operation, maintenance, or repair. Base leadership decides the importance of each aspect, and the template identifies them all as a suggestion to what may be important. The base leadership at each base must decide what aspect to focus the metrics on. Also, because the standards are very broad, much confusion is introduced as to what should the standard be collecting for data. Many of the lines evaluated in this research were very similar to the metrics found in the template shown in Table 42. Many of those did not pass the

primary evaluation because they were not understandable or quantifiable. T-3 has an objective to "maintain, repair, operate, and construct" and the performance threshold states these must be met 100% of the time. This creates a confusing standard and metric and unfortunately is commonly found on the PWS and QASP templates. It is not clear as to what is meant by repair 100% of the time or 100% construct (for example, economical, quality, or timely). This research used some of the information found within the templates to recommend metrics that may be used Air Force wide in competitive sourcing efforts. Those metrics are outlined in the *Proposed Metrics* section.

Evaluation of Operations Flight Metrics

The AFCESA Operations Flight Metrics, located in Appendix B, were also evaluated using the same primary evaluation applied to the 161 standard and metric lines and the AFCESA template metrics. The AFCESA Operations Flight Metrics were individually classified according to their Operation Flight Function and gauge cluster. The classifications of the metrics are sorted and summed in Table 44, *Classification of AFCESA Operations Flight Metrics.* The findings for the 47 AFCESA metrics were similar to that of the templates because only two Operations Flight Functions and only three gauge clusters contain a majority of the metrics. Two Operations Flight Functions, 1.1, Operate, Maintain, and Repair, and 1.12, Time and material accounting, contained 22 (47%) of the metrics. The time/schedule, operational service level, and work product delivered gauge clusters accounted for 34 (72%) of the metrics. Many areas are not sufficiently evaluated by the AFCESA metrics. Table 44, *Classification of AFCESA*

Operations Flight Metrics, identifies the Operation Flight Functions and gauge clusters for the 47 metrics.

Table 44. Classification of AFCESA Operations Flight Metrics

Operation Flight Functions	**Gauge Clusters**								
	HR	T/S	OSL	Quality	F/B	CS	WPD	Pro	Total number of metrics found within Operations Flight Function Classification:
1.1, Operate, maintain, and repair	0	2	4	0	0	0	4	0	**10**
1.2, Trained personnel	0	0	0	0	0	0	1	0	**1**
1.3, Emergency response	0	0	0	0	0	0	0	0	**0**
1.4, Compliance	0	0	0	0	0	0	0	0	**0**
1.5, Reliable utilities	0	0	3	1	0	0	2	0	**6**
1.6, Base support	0	0	2	0	0	0	0	0	**2**
1.7, Quality standards	0	4	1	1	0	1	1	0	**8**
1.8, Self help	0	0	0	0	1	0	1	0	**2**
1.9, Future plans	0	0	0	0	0	0	1	0	**1**
1.10, Allocate Resources	2	0	1	0	0	0	0	1	**4**
1.11, Provide costs to customers	0	0	0	0	0	0	0	0	**0**
1.12, Time and material accounting	0	4	0	1	1	0	2	4	**12**
1.13, Logistics support	0	0	0	0	0	0	0	0	**0**
1.14, Facility manager program	0	0	1	0	0	0	0	0	**1**
Total number of metrics found within gauge cluster classification:	**2**	**10**	**12**	**3**	**2**	**1**	**12**	**5**	**47**

The primary line evaluation was applied to each of the 47 AFCESA metrics as the next step. Each of the metrics, which can be located in Appendix Q with their corresponding primary evaluation, failed the sensor portion of the evaluation; and all

metrics but nine failed the frequency portion. Seventeen of the metrics can be corrected by establishing an appropriate sensor and frequency.

Some of the 47 metrics listed by AFCESA tend to evaluate processes as if the major command or the CE unit is the customer, and because the 161 created lines were evaluated from a base personnel viewpoint, 27 of the 46 AFCESA metrics were classified as not high impact. For example, M-10 from Appendix B measures RWP hours by zone, (some CE units break work-orders out according to zones, others break work out according to shops), and base personnel may not be interested in this aspect, therefore M-10 was not used. Also, many of the AFCESA metrics can be classified as a time/schedule gauge cluster. But when evaluating the time/schedule aspect of the function, the metrics are not evaluating the quality of the work (done right the first time), the cost effectiveness of the work, or the customer service aspect of the work completed. All of which would be measured if the customer were the primary customer, not the major command. In another example, the numbers of self-help customers are tracked (M-33). Neither the customer satisfaction nor the financial aspect of the self-help store is evaluated, just the number of customers, which is compared to the previous year. This is something the major command and the civil engineering unit is interested in, but has no purpose for improving effectiveness. If numbers for the self-help are low, the civil engineering unit cannot do much to improve the situation, except increase awareness (but this metric does not evaluate awareness).

Although the AFCESA metrics and templates cannot be used as is, they do provide a starting point for this research effort to create specific metrics to be used in

future competitive sourcing efforts. The proposed metrics are presented in the following section.

Proposed Metrics

There were four steps to creating the proposed metrics: create focused functions, select focused functions that impact base personnel as the customer, consolidate functions and gauge clusters, and provide metrics on critical areas that are formed. The first step is to divide the current 14 Operations Flight Functions (Table 9, *Civil Engineer Operations Flight Functions*) into focused functions. The focused functions are more specific in identifying the critical areas and direct the researcher in developing metrics to evaluate the critical areas. For example, the "operate, maintain, and repair" Operations Flight Function (1.1) is identified as having three areas of focus: operate, repair, and maintain, and each is listed separately in Table 45, *Focused Operations Flight Functions*. Table 45 lists the 21 focused functions developed from the 14 Operations Flight Functions. This step is necessary to ensure all critical areas of the 14 Operations Flight Functions are identified and to ensure the areas will have metrics designed to evaluate them.

Table 45. Focused Operations Flight Functions

ID	Focused Function
1	Operate systems
2	Maintain systems
3	Repair systems
4	Provide trained personnel
5	Maintain capability to respond to emergency conditions
6	Compliance with applicable environmental laws, codes and directives
7	Compliance with applicable fire laws, codes and directives
8	Compliance with applicable safety laws, codes and directives
9	Provide reliable utilities
10	Provide cost-effective utilities
11	Provide base support services
12	Establish quality mechanisms
13	Establish Self Help system
14	Develop future plans

15	Update future plans
16	Allocation of resources
17	Provide customers with costs of work or services performed on their facilities
18	Maintain a time accounting system
19	Maintain a material accounting system
20	Provide effective logistics support
21	Provide a facility manager program

The second step in creating the proposed metrics is identifying which of the focused functions impact base personnel as the customer (as was done in the primary evaluation of the 161 lines). There were potentially three customer viewpoints considered for this research: MAJCOM, CE unit, or base personnel. It was decided that the base personnel viewpoint was the most critical because civil engineer units are service organizations serving the base populace for a majority of the time. Therefore, the determination that base personnel are the customers focuses the standards and metrics to be created on the customer. It is important that the distinction is made because of potential conflicts that may arise. For example, repairing a broken utility quickly with additional personnel (focused on the customer from a time/schedule view) and, repairing it as economically as possible with fewer personnel (focused on CE unit and MAJCOM from a finance/budget view) may conflict because of the additional personnel that may be required to repair the break quickly. The additional personnel would cost the CE unit and MAJCOM more, but the repair may be completed sooner than if the additional personnel were not available. The decision of which standards and metrics to evaluate for what customer viewpoint must come from leadership, which complicates the issue of standard and metric design because of the variance in which customers the leadership feels are most important. Table 46, *Functions Important to Base Personnel as Customers*, lists the only the focused Operations Flight Functions (from Table 45) that may apply to base

personnel as customers. Some of the functions received a new ID number because four of the functions were removed from the list that is presented in Table 45.

Table 46. Functions Important to Base Personnel as Customers

ID	Focused Function
1	Operate systems
2	Maintain systems
3	Repair systems
4	Provide trained personnel
5	Maintain capability to respond to emergency conditions
6	Compliance with applicable environmental laws, codes and directives
7	Compliance with applicable fire laws, codes and directives
8	Compliance with applicable safety laws, codes and directives
9	Provide reliable utilities
10	Provide cost-effective utilities
11	Provide base support services
12	Establish Self Help system
13	Develop future plans
14	Update future plans
15	Provide customers with costs of work or services performed on their facilities
16	Provide effective logistics support
17	Provide a facility manager program

Each of the focused functions in Table 46 are important to base personnel as customers. Table 47, *Excluded Functions*, contains the functions removed from the critical area list because the functions are internal to the civil engineering unit. The civil engineering unit or MAJCOM has greater interest in these four critical areas than base personnel. Base personnel are not directly affected by each of the critical areas listed in Table 47. The ID number is representative of the ID number found in Table 45.

Table 47. Excluded Functions

ID	Focused Function
12	Establish quality mechanisms
16	Allocation of resources
18	Maintain a time accounting system
19	Maintain a material accounting system

The third step of the proposed evaluation system was to consolidate all gauge clusters and Operations Flight Functions into a matrix. Many of the 17 focused functions from Table 46, and nine gauge clusters (Table 48, *Gauge Clusters*) have duplicates or they have similar functions that can be combined. This is done to reduce the duplication of effort in creating performance metrics. The other consolidations involve combining the Operations Flight Functions with a duplicate gauge cluster, combining duplicate gauge clusters, and also deleting gauge clusters not used. Table 49, *Explanation of Consolidated Gauge Clusters and Focused Functions,* lists how and why the gauge clusters and focused functions were consolidated.

Table 48. Gauge Clusters

Gauge Cluster	Objective
Finance/Budget	Cost management and on-cost delivery of services
Customer Satisfaction	Critical attributes that generate satisfaction with services and work products among internal business customers
Work Product Delivered	Quantifying the amount of service or work provided in a given time period
Quality	Objective and measurable aspects of quality of services and products
Time/Schedule	Critical service, product, and project time frames and the ability to deliver on-time
Business Value	Measures the outsourcing agreement's outcome attainment from the financial/shareholder view, external customer/marketplace view, organizational learning and improvement view, and internal process improvement view
Operational Service Levels	Critical service tempos, availability, and delivery of work products
Human Resources	Changes to the skill inventory and internal job satisfaction
Productivity	Efficiency of the production and delivery of work products

Table 49 identifies the consolidation of both gauge clusters and focused functions, listed numerically and in random order, and also lists the justification to the consolidation.

Table 49. Explanation of Consolidated Gauge Clusters and Focused Functions

Consolidation
The Business Value gauge cluster was deleted because it measures outcomes of the outsourcing agreement. The researcher felt this did not impact base personnel, but may be more for taxpayers.
Human Resources gauge cluster was deleted because it emphasizes the civil engineering unit as the customer.
Operational Service Level gauge cluster emphasizes the civil engineering unit as the customer; therefore it was deleted.
Customer Satisfaction gauge cluster will be met by satisfying time/schedule, quality, finance/budget, and work product delivered gauge clusters. If these four gauge clusters are met, the customer should be satisfied.
Response function is listed under time/schedule gauge cluster with categories for emergency, urgent, and routine work orders listed separately. Response is directly related to time/schedule.
Trained personnel function is applied to time/schedule, quality, work product delivered, and finance/budget gauge clusters. All the gauge clusters require trained personnel; if one gauge cluster is not performing well, it may be an indication that more training is required.
Safety compliance, fire compliance, and environment compliance are included under the quality gauge cluster. If aspects of safety, fire, and environment are met, some aspects of quality should be satisfied. Each segment of compliance (fire, safety, and environment) must have its own metrics to evaluate what is deemed important by leadership.
Base support function and logistics support function are listed under a new heading of installation support to simplify the creation of metrics.
Cost information function is listed under self-help function because cost is directly related to determining if the project can be done with self-help. Self-help is the only aspect that affects the Operations Flight. For example, if the work-order became a project, the project control would shift to the Engineering Flight.
Productivity gauge cluster emphasizes the civil engineering unit, but is moved to time/schedule because productivity may be a root cause of not obtaining the time/schedule gauge cluster.
Develop plan function and update plan functions are moved under the facility manger program because they are directly related in that plans involve facilities and surrounding areas.

The consolidated list of gauge clusters and Operations Flight Functions found in Table 49 are listed in matrix form in Table 50, *Cross Reference of Gauge Clusters and Specific Operations Flight Functions*, with the new gauge clusters listed vertically in the table and the new functions listed horizontally. If a gauge cluster was applicable to a function, from a base personnel perspective, it was identified in Table 50 with an "X". A metric was developed (by reviewing applicable standards and metrics from this research,

AFCESA template, and Operations Flight metrics) for each "X" found within Table 50 and presented as a recommendation for use in future competitive sourcing efforts. The information contained within the cells of Table 50 is not all-inclusive; they just list the changes made by this research effort. For example, the Quality cell under gauge clusters does not contain just trained personnel, fire compliance, safety compliance, environment compliance, and customer satisfaction. These five are listed under Quality to suggest how the original Operations Flight Functions and Gauge Clusters can be combined. The combinations create mutually exclusive functions and gauge clusters and simplify the creation of the proposed metrics.

From Table 50, an "X" marking indicates a function is important to the base personnel given the specific gauge cluster, as identified by the researcher. For example, the specific function 1 intersects with work product delivered gauge cluster. This indicates customers are interested in the output of the system. In many cases, the output level desired by the base personnel is 100%. For example, base personnel want quality electricity (no brown outs) or clean water, 100% of the time. They typically are not interested in the cost or time/schedule of delivering the electricity or water; they want an immediate and quality output. Hence, the Operate systems function intersects with the quality and work product delivered gauge clusters. The remaining matrix was completed in the same manner. The following sections (one for each of the seven functions found in Table 50) recommend a metric to use in future competitive sourcing efforts. The recommendations for improvement were provided by 1) slightly changing the content of a failing standard and metric, 2) making changes based upon metrics found in the AFCESA templates, and 3) making changes based upon AFCESA Operations Flight metrics.

Table 50. Cross Reference of Gauge Clusters and Specific Operations Flight Functions

ID	Specific Function	Gauge Clusters			
		Time/Schedule -response --emergency --urgent --routine -productivity -customer satisfaction	Quality -trained personnel -fire compliance -safety compliance -environment compliance -customer satisfaction	Finance/ Budget -trained personnel -customer satisfaction	Work Product Delivered -trained personnel -customer satisfaction
1	Operate systems		X		X
2	Maintain systems	X	X	X	X
3	Repair systems	X	X	X	X
4	Installation support -base support -logistics support	X	X		X
5	Self help -cost information	X	X		X
6	Facility manager program -develop plans -update plans	X	X		X

Operate Systems

The specific function labeled Operate systems requires two metrics to evaluate the areas from base personnel viewpoint, which are identified by the "X" markings in Table 50. The two metrics need to evaluate quality and work product delivered. The two gauge clusters are listed below with their proposed metrics. The leadership from the base must decide the priority of the systems. For example, water treatment and electrical distribution may be ranked a higher priority than air conditioning, because water and electricity may have much more impact on the mission than air conditioning. Metrics can be developed according to the priority of the systems. The metrics provided in this research effort do not account for priority among the systems.

Quality

The proposed quality metric was adapted from line #64 (1.1 Operations Flight Function), M-38 (Operations Flight metrics), and T-3 (AFCESA templates). Table 51, *Proposed Operate Systems Quality Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the quality of the output from the system.

Table 51. Proposed Operate Systems Quality Metric

Objective	Threshold	Surveillance
Systems output commensurate with industry standards	95% of all systems (as determined by leadership) measured weekly must have desired output (or a frequency established by leadership)	Review of records and customer complaints on a weekly basis (must match threshold time)

Work Product Delivered

The proposed work product delivered metric was adapted from line #12 (1.5 Operations Flight Function), M-41 and M-42 (Operations Flight metrics), and T-4 (AFCESA templates). Table 52, *Proposed Operate Systems Work Product Delivered Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the output from the system.

Table 52. Proposed Operate Systems Work Product Delivered Metric

Objective	Threshold	Surveillance
Operate system	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually (or other established time)	Monthly review of records and customer complaints (time must match threshold time)

Maintain Systems

The specific function labeled Maintain Systems requires four metrics to evaluate the areas from base personnel viewpoint, which are identified by the "X" markings in Table 50. The four metrics need to evaluate time/schedule, quality, finance/budget, and work product delivered. The four gauge clusters are listed below with their proposed metrics. The maintenance of systems would also require a method to prioritize the systems according to base mission.

Time/Schedule

The proposed time/schedule metric was adapted from line #6 (1.1 Operations Flight Function), M-1 through M-5 (Operations Flight metrics), and T-2 (AFCESA templates). Table 53, *Proposed Maintain Systems Time/Schedule Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the response time for maintaining the system. The time/schedule metrics should contain three subsets: Emergency, Urgent, and Routine, because each of the subsets contains different time response criteria.

Table 53. Proposed Maintain Systems Time/Schedule Metric

Objective	Threshold	Surveillance
Emergency (substitute urgent or routine) work requests completed in 24 hours (substitute 5 days and 30 days for urgent and routine, respectively)	95% of all systems (as determined by leadership) measured weekly must have desired maintencance (or a frequency established by leadership)	Review of records and customer complaints on a weekly basis (must match threshold time)

Quality

The proposed quality metric was adapted from line #30 (1.1 Operations Flight Function), and T-3 (AFCESA template). Table 54, *Proposed Maintain Systems Quality Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the quality of the system maintenance.

Table 54. Proposed Maintain Systems Quality Metric

Objective	Threshold	Surveillance
Maintain system to standard commensurate with design criteria and accepted industry standards	95% of all systems (as determined by leadership) measured weekly must have desired maintenance (or a frequency established by leadership)	Random sampling, review of records (parts consumed) and customer complaints on a weekly basis (must match threshold time)

Finance/Budget

The proposed finance/budget metric was adapted from line #59 (1.7 Operations Flight Function), and T-3 (AFCESA template). Table 55, *Proposed Maintain Systems Finance/Budget Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the cost of maintaining the system.

Table 55. Proposed Maintain Systems Finance/Budget Metric

Objective	Threshold	Surveillance
Measure the cost of maintaining system	Determine some annual percentage of the total cost of the system that the maintenance cannot exceed (identifies aging systems)	Annual review of maintenance records and repair actions (time must match threshold time)

Work Product Delivered

The proposed work product delivered metric was adapted from line #12 (1.5 Operations Flight Function), M-6 (Operations Flight metrics), and T-4 (AFCESA

template). Table 56, *Proposed Maintain Systems Work Product Delivered Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the maintenance of the system.

Table 56. Proposed Maintain Systems Work Product Delivered Metric

Objective	Threshold	Surveillance
Maintain system according to schedule	95% of all systems (as determined by leadership) measured weekly must have desired maintenance (or a frequency established by leadership)	Monthly review of maintenance records and repair actions (time must match threshold time)

Repair Systems

The specific function labeled Repair systems requires four metrics to evaluate the areas from base personnel viewpoint, which are identified by the "X" markings in Table 50. The four metrics need to evaluate time/schedule, quality, finance/budget, and work product delivered. The four gauge clusters are listed below with their proposed metrics. It was found that the maintenance metrics could serve as repair metrics as well, just by replacing maintain with repair in the metrics.

Time/Schedule

The proposed time/schedule metric was adapted from line #6 (1.1 Operations Flight Function), M-1 through M-5 (Operations Flight metrics), T-2 (AFCESA template). Table 57, *Proposed Maintain Systems Time/Schedule Metric*, lists the objective, threshold and

surveillance for the proposed metric, which focuses on the response time for repairing the system.

Table 57. Proposed Repair Systems Time/Schedule Metric

Objective	Threshold	Surveillance
Emergency (substitute urgent or routine) work requests completed in 24 hours (substitute 5 days and 30 days for urgent and routine, respectively)	95% of all systems (as determined by leadership) measured weekly must have desired response timet (or a frequency established by leadership)	Review of records and customer complaints on a weekly basis (must match threshold time)

Quality

The proposed quality metric was adapted from line #30 (1.1 Operations Flight Function) and T-3 (AFCESA template). Table 58, *Proposed Repair Quality Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the quality of the system repair.

Table 58. Proposed Repair Quality Metric

Objective	Threshold	Surveillance
Repair system to standard commensurate with design criteria and accepted industry standards	95% of all systems (as determined by leadership) measured weekly must be repaired according to standards (or a frequency established by leadership)	Random sampling, review of records (parts consumed) and customer complaints on a weekly basis (must match threshold time)

Finance/Budget

The proposed finance/budget metric was adapted from line #59 (1.7 Operations Flight Function) and T-4 (AFCESA template). Table 59, *Proposed Repair Systems Finance/Budget Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the cost of repairing the system.

Table 59. Proposed Repair Systems Finance/Budget Metric

Objective	Threshold	Surveillance
Measure the cost of repairing system	Determine some annual percentage of the total cost of the system that the repairs cannot exceed (identifies aging systems)	Annual review of repair records and repair actions (time must match threshold time)

Work Product Delivered

The proposed work product delivered metric was adapted from line #12 (1.5 Operations Flight Function), M-13 (Operations Flight metrics) and T-3 (AFCESA template). Table 60, *Proposed Repair Systems Work Product Delivered Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the completion of the repair on the system.

Table 60. Proposed Repair Systems Work Product Delivered Metric

Objective	Threshold	Surveillance
Repair system according to schedule	95% of all systems (as determined by leadership) measured weekly must be repaired according to standards (or a frequency established by leadership)	Monthly review of maintenance records and repair actions (time must match threshold time)

Installation Support

The specific function labeled installation support requires three metrics to evaluate the areas from base personnel viewpoint, which are identified by the "X" markings in Table 50. The three metrics need to evaluate time/schedule, quality, and work product delivered. The three gauge clusters are listed below with their proposed metrics. The finance/budget gauge cluster is not used because the base personnel may not be interested in the cost of providing the support, they are more interested in results.

Time/Schedule

The proposed time/schedule metric was adapted from M-13 (Operations Flight Metrics) and T-6 (AFCESA template). Table 61, *Proposed Installation Support Time/Schedule Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the response time for installation support (e.g., pest management, and snow removal).

Table 61. Proposed Installation Support Time/Schedule Metric

Objective	Threshold	Surveillance
Measure the number of base support commitments (number of commitments completed on time divided by the number of commitments)	95% of all support commitments (as determined by leadership) measured monthly must be completed on time (or a frequency established by leadership)	Review of records and customer complaints on a monthly basis (must match threshold time)

Quality

The proposed quality metric was adapted from line #30 (1.1 Operations Flight Function. Table 62, *Proposed Installation Support Quality Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the quality of the support received.

Table 62. Proposed Installation Quality Metric

Objective	Threshold	Surveillance
Installation support commensurate with industry practices	95% of all support (as determined by leadership) measured monthly must be completed according to standards (or a frequency established by leadership)	Random sampling, review of records and customer complaints on a monthly basis (must match threshold time)

Work Product Delivered

The proposed work product delivered metric was adapted from, M-1 through M-5, and M-13 (Operations Flight Metrics), and T-6 (AFCESA template). Table 63, *Proposed Installation Support Work Product Delivered Metric*, lists the objective,

threshold and surveillance for the proposed metric, which focuses on the output from the installation support.

Table 63. Proposed Installation Work Product Delivered Metric

Objective	Threshold	Surveillance
Measure the number of commitments (number of commitments completed divided by number of total commitments)	95% of all support commitments (as determined by leadership) measured monthly must be completed (or a frequency established by leadership)	Monthly review of records (time must match threshold time)

Self-Help

The specific function labeled self-help requires three metrics to evaluate the areas from base personnel viewpoint, which are identified by the "X" markings in Table 50. The three metrics need to evaluate time/schedule, quality, and work product delivered. The three gauge clusters are listed below with their proposed metrics. The finance/budget gauge cluster is not used because the base personnel may not be interested in the cost of providing the self-help, they are more interested in results.

Time/Schedule

The proposed time/schedule metric was adapted from M-13 (Operations Flight Metrics) and T-6 and T-7 (AFCESA template). Table 64, *Proposed Installation Support Time/Schedule Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the response time for self-help.

Table 64. Proposed Self-Help Time/Schedule Metric

Objective	Threshold	Surveillance
Measure the number of self-help commitments completed on time (number of commitments completed on time divided by the number of commitments)	95% of self-help commitments (as determined by leadership) measured monthly must be delivered on time (or a frequency established by leadership)	Review of records and customer complaints on a monthly basis (must match threshold time)

Quality

The proposed quality metric was adapted from line #23 (1.12 Operations Flight Function) and T-7 (AFCESA template). Table 65, *Proposed Self-Help Quality Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the quality of the self-help received.

Table 65. Proposed Self-Help Quality Metric

Objective	Threshold	Surveillance
Track variance in cost estimates. Conduct analysis of all estimates having a 10% or greater difference between planned and actual cost)	95% of self-help commitments(as determined by leadership) measured monthly must not be greater than 10% variance (or a frequency established by leadership)	Random sampling, review of records and customer complaints on a monthly basis (must match threshold time)

Work Product Delivered

The proposed work product delivered metric was adapted from M-13 (Operations Flight Metrics) and T-7 (AFCESA template). Table 66, *Proposed Self-Help Work Product Delivered Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the output from the self-help.

Table 66. Proposed Self-Help Product Delivered Metric

Objective	Threshold	Surveillance
Measure the number of self-help customers (number of self-help estimates completed divided by number of total self-help estimates)	95% of all self-help commitments (as determined by leadership) measured monthly must be completed (or a frequency established by leadership)	Monthly review of records and customer complaints (time must match threshold time)

Facility Manager Plan

The specific function labeled facility manager plan requires three metrics to evaluate the areas from base personnel viewpoint, which are identified by the "X" markings in Table 50. The three metrics need to evaluate time/schedule, quality, and work product delivered. The three gauge clusters are listed below with their proposed metrics. The finance/budget gauge cluster is not used because the base personnel may not be interested in the cost of providing the facility plans, they are more interested in results.

Time/Schedule

The proposed time/schedule metric was adapted from M-1 through M-5 and M-13 (Operations Flight Metrics) and T-7 (AFCESA template). Table 67, *Proposed Facility Manager Plan Time/Schedule Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the response time for providing plans and updates.

Table 67. Proposed Facility Manager Plan Time/Schedule Metric

Objective	Threshold	Surveillance
Measure the number of plans and updates (number of plans and updates completed on time divided by the number of plans and updates)	95% of all plans and updates (as determined by leadership) measured monthly must be completed on time (or a frequency established by leadership)	Review of records and customer complaints on a monthly basis (must match threshold time)

Quality

The proposed quality metric was adapted from line #23 (1.12 Operations Flight Function) and T-7 (AFCESA template). Table 68, *Proposed Facility Manager Plans Quality Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the quality of the plans and updates.

Table 68. Proposed Facility Manager Plans Quality Metric

Objective	Threshold	Surveillance
Track variance in estimates. Conduct analysis of all estimates having a 10% or greater difference between planned and actual cost) Or number of re -writes	95% of all plans and updates (as determined by leadership) measured monthly cannot exceed 10% variance between planned and actual cost (or a frequency established by leadership)	Random sampling, review of records and customer complaints on a monthly basis (must match threshold time)

Work Product Delivered

The proposed work product delivered metric was adapted from line #12 (1.5 Operations Flight Function), M-1 through M-5 (Operations Flight metrics), and T-7 (AFCESA template). Table 69, *Proposed Facility Manager Plan Work Product Delivered Metric*, lists the objective, threshold and surveillance for the proposed metric, which focuses on the completion of plans and updates.

Table 69. Proposed Facility Manager Plan Work Product Delivered Metric

Objective	Threshold	Surveillance
Measure the number of plans and updates (number of plans and updates completed divided by number of total plans and updates)	95% of all plans and updates (as determined by leadership) measured monthly must be completed (or a frequency established by leadership)	Monthly review of records and customer complaints (time must match threshold time)

The 19 proposed metrics cover all aspects of the consolidated Operations Flight Functions and the gauge clusters, given that base leadership prioritizes the systems. The proposed metrics were developed using input from the eight bases, the AFCESA

templates, and the AFCESA Operations Flight Metrics. AFCESA should incorporate the proposed metrics into the Service Delivery Summary of the PWS and QASP templates. Better produced performance metrics will result at base level.

Results

Based upon the results of this research, several findings evolved. Five findings will be listed and discussed in the following sections. The first finding is that some bases do not use the QASP document. Personnel from those bases stated that a QASP was not needed at the time the competitive sourcing process took place, but their PWS stated that a QASP must be followed. Another base that did not have any lines pass the primary evaluation did not use a QASP either. The requirement for a QASP, outlined in AFI 63-124, is not enforced at base level. This results in an improper evaluation to determine if the service provider has managed to maintain or increase efficiency.

The second finding comes from the lines that passed the secondary evaluation. The six lines targeted the time/schedule gauge cluster, leaving many of the gauge clusters unevaluated. There are many of the gauge clusters identified in Chapter 2, *Literature Review* that are not properly evaluated or not evaluated at all. Civil engineering is a customer service operation and should focus its efforts on customer satisfaction (although very difficult to quantify), finance/budget (doing the work in the most cost effective manner), and quality (doing the work right the first time). These three gauge clusters (customer satisfaction, finance/budget, and quality) focus the standards and metrics to evaluate aspects that are important to the customer (base personnel). The lines lacked many of the other gauge clusters as well. For instance, work product delivered, business

value, operational service levels, human resources, and productivity gauge clusters were not properly evaluated or were not included at all in the standards and metrics.

The third finding is that the critical areas defined by the Operations Flight Functions are not sufficiently evaluated. Many of the standard and metric lines taken from the competitive sourcing documents were too broad and not understandable or quantifiable, leaving critical areas without evaluation. There were only three Operations Flight Functions that have some properly designed metrics, based upon results of this research. Six metrics were found to sufficiently evaluate Operations Flight Function 1.6, Base Support, Function 1.3, Emergency Response, and 1.1, Operate, Maintain, and Repair. Not all gauge clusters were found in the six lines that passed both the primary and secondary evaluation; five of the Operations Flight Functions had the time/schedule gauge cluster and one had the Operational Service Level gauge cluster. When the seven gauge clusters are applied to the 14 Operations Flight Functions, it is apparent that none of the 14 functions are properly evaluated.

The fourth finding involves the competitive sourcing classification and competitive sourcing databases. Numerous errors of improperly labeled contracts were identified in AFCESA databases at the outset of this research. For example, a base was identified as having two contracts, one an MEO and the other a private sector. After contacting the base, it was discovered that the private sector contract was non-existent. The other example was mentioned in Chapter 3, *Methodology*, in which the base was identified as having a BOS contract, but after contacting the base, it was discovered the base had two small MEO contracts and two small private sector contracts.

The fifth finding of this research is the lack of properly designed standards and metric provided as examples in the templates and list of metrics. Because of the extensive efforts in competitive sourcing, bases would benefit from quality examples to guide them in the proper measurement and evaluation of the effort that is being competitively sourced. The examples of standards and metrics provided are poorly designed to properly evaluate the competitive sourcing effort from the base personnel viewpoint. They do provide some insight as to what to look for when designing the metric, but they should not be used as they are written. If quality standards and metrics are not used, sustained or improved efficiency of competitive sourcing efforts cannot be determined, resulting in wasted money and personnel time to competitively source a function that may or may not be improved, regardless of who provides the service. The lines used in the competitive sourcing efforts of this research are not sufficient to provide information if the service provider is maintaining, improving, or declining in performance. Although, some of the lines not containing a frequency is an easy fix, if the only step the line failed was the lack of frequency and the frequency is the correct frequency for the process. Overall, because of the lack of performance data, it is not proven that competitive sourcing is a method to improve or maintain efficiency.

Summary

In summary, of the approximately 1500 commercial activities in the Air Force, nearly one-third is civil engineering related. This research selected 10 (later reduced to eight) bases to provide civil engineering competitive sourcing documents. From the eight bases, a variety of standards and metrics were collected, 161 total, and the variety

indicates a non-standardized method of creating standards and metrics, even with the templates and metrics as guidelines. Each of the 161 lines were then subjected to a primary line evaluation to determine if the standard and metric were properly designed. Only seven standards and metrics passed the primary line evaluation. A secondary line evaluation (quantitative) was then applied to the seven standard and metric lines that passed the primary line evaluation. The secondary line evaluation consisted of telecommunications with respective base personnel. Six standard and metric lines passed the secondary line evaluation; only 4% of the standards and metrics evaluated in this research are properly designed.

This chapter discussed the primary and secondary evaluations of the performance standard and metric lines. Each of the 161 lines was evaluated and example lines were provided for each of the steps that failed during the evaluations. This chapter also provided an overview of the AFCESA PWS template and the Operations Flight Metrics. Metrics were proposed for use in future competitive sourcing efforts and were developed by adapting the metrics found on the templates, list of AFCESA metrics, and the performance standards and metrics found within competitive sourcing documents. Finally, the chapter closed with a brief discussion of the results.

5. Conclusions and Recommendations

This chapter will provide a summary of the research effort and the major findings. Limitations of this research are discussed, as are future research topics. Finally, this chapter will provide recommendations based upon the results of the data collection and the evaluation of the performance standards and metrics.

Summary of Research Effort

The purpose of this research effort was to evaluate standards and metrics currently used in civil engineering competitive souring efforts. An evaluation system was established and then applied to the standards and metrics, resulting in the identification of improperly designed metrics and critical areas not evaluated. This research consisted of obtaining competitive sourcing documents from eight bases from various Air Force Commands. An attempt was made to collect documents from ten bases; two of the bases considered had either an improperly labeled contract or had pulled their solicitation. Once the documents were collected, the standards and metrics were extracted from the Service Delivery Summary, or equivalent, (the portion of the PWS that lists the services of the contract), and merged into lines that contained the objective, threshold, and the surveillance. A total of 161 lines were created from the documents collected from the eight bases. Each line was then identified for its respective Operations Flight Function and its corresponding gauge cluster. Once the lines were identified, they were evaluated based upon a system created by features from metric design literature, Total Quality Management, and Government Performance Results Act. A primary evaluation was

established from six of the features and a secondary evaluation was established from five of the features. The researcher reviewed each of the lines to conduct the primary line evaluation. The secondary line evaluation involved features that only the specific bases could answer and the information obtained from the bases provided a quantitative secondary line evaluation. Only 33 lines passed the primary evaluation to continue with the secondary evaluation. Some of the standards and metrics are easy to fix (i.e., add frequency or sensor) but others require major work because they are too broad (not specific in what information is important), or they have a mismatch between the objective, threshold, or surveillance. 26 of the 33 metrics were not evaluated because some bases did not have QASPs and others had not initiated a contract at the time of the research, therefore, only seven lines were evaluated by the secondary evaluation. Of the seven lines evaluated in the secondary evaluation, six were determined as sufficiently designed (passed both the primary and secondary evaluations with a "yes" to all eleven questions).

Summary of Conclusions

Once the lines were created and just prior to the primary evaluation, it was evident that critical areas of the Operations Flight were not being sufficiently evaluated. In fact, some areas were not evaluated at all, for example, "develop and update future plans", "provide customers with costs of work or services", and "provide and effective facility manager program" were three Operations Flight Functions that were not evaluated. The remaining 11 Operations Flight Functions were insufficiently evaluated because 128 lines failed some aspect of the primary evaluation.

Each line was classified according to a gauge cluster. This provided information that the competitive sourcing documents utilized few of the nine gauge clusters. Some of the nine gauge clusters were absent from the beginning of the research. Very few of the lines contained a gauge classification of quality, finance/budget, productivity, work product delivered, customer satisfaction, and business value, and none of the lines contained a gauge classification of human resources. Quality and Customer Service should be integral to the evaluation of the civil engineering processes because civil engineering is a service, but quality and customer service are very difficult to quantify.

Other findings from the research are that templates and current Operations Flight Metrics, for the most part, are not sufficient to evaluate civil engineering (based upon base personnel as the customer). The metrics need to be reassessed to ensure civil engineering units are improving in their provided services of quality, cost, and customer satisfaction. Due to the number of bases selected, it was also found that many of the competitive sourcing documents lacked similarity. The bases from within the same command typically had similar formats, but the formats varied widely from command to command. Even the bases that are now undergoing the competitive sourcing process have their own format and style for their documents. The variety of documents created some difficulties when initiating this research. Finally, it was found that record keeping for the competitive sourcing efforts was not error-free; several errors were found in the contract classifications at the outset of this research.

Bases need to have enforcement of the QASP document. The QASP will ensure the performance requirements are tracked. Without the QASP, service providers are not evaluated properly and sustained or improved performance cannot be determined. Also,

there are many critical areas without sufficient evaluation. The critical areas can be readily identified (i.e., flowcharts) and metrics can be developed with the 19 proposed metrics. The 19 proposed metrics provide a solid foundation to build the metrics. Also, the metric evaluation system used in this research can be applied to any metric in any specialty. A "no" answer to any of the questions indicates a poorly designed metric. Once the metric is identified as insufficient, closer inspection will identify what is needed to improve the metric.

Research Limitations

There were a few limitations apparent from the outset of this research. First, this research was limited because only the Air Force was evaluated. There are a variety of competitive sourcing documents from several Federal Government departments that would provide insight into which performance measurement programs are effective. Within the Air Force, documents were used from only eight bases, which narrowed the scope of the research. Second, the research was limited because only the Operations Flight of the civil engineering unit was evaluated; the scope of performance measurement was limited to just a portion of the civil engineering unit. A complete evaluation of the entire civil engineering unit should be accomplished to effectively evaluate the unit as a whole, and to develop quality metrics. Finally, the research was partially subjective and depended upon the knowledge of the researcher.

Future Research

If competitive sourcing efforts continue as planned, there will be an increased need in determining if the functions that are being outsourced are maintaining, improving, or declining in performance. The only way to determine if competitive sourcing is saving money while providing a reasonable level of service is to have properly designed metrics evaluating the process. The focus of the designed metrics should consider both financial and non-financial aspects of the process. With this in mind, there are many other functions that should have their standards and metrics evaluated. Other possible areas to evaluate are:

- Evaluation of the performance of existing metrics at bases (i.e., MAJCOM metrics or competitive sourcing metrics)
- Evaluation of other Air Force civil engineering functions (i.e., MAJCOM metrics or competitive sourcing metrics)
- Evaluation of other Air Force competitive sourcing efforts (communications, services, aircraft maintenance, to name a few)
- Evaluation of other governmental agencies (Army, Navy, or Department of Energy) metrics and their competitive sourcing efforts
- Evaluation of private sector firms that have outsourced one or more functions and compare their standards and metrics to a similar Air Force function
- Continue the quantitative study of the metric design process presented in this research to determine the importance of each of the 11 steps used in the primary and secondary evaluations. The quantitative test developed could be applied to

any metric or standard. Submit surveys to Quality Assurance Evaluators and service providers.

Recommendations

The first recommendation is that AFCESA incorporate the proposed metrics into the service delivery summary of the templates for use in future civil engineering Operations Flight competitive sourcing efforts. The proposed metrics offer a good method to identify critical areas that need evaluation; they standardize the metrics across the Air Force (current variations in metrics would be minimized) and all service providers are evaluated equally (MEO vs. contractor), the quality of the proposed metrics is higher, all critical aspects of the Operations Flight would be evaluated, the performance of the service provider is effectively measured (personnel know what to measure and when to measure), and the objective, threshold, and surveillance are reasonable because they were adapted from current standards and metrics.

Instituting the proposed metrics would impact the Plan of Action and Milestone (POAM) for the process, Table 1. The specific workload, data needed for collection, and unit goals required are identified in the proposed metric, resulting in less wasted effort in collecting the necessary information to support the metric. The proposed metrics will also impact Step 1, Team Formation, of the PWS development (Figure 2) because the requirements of the team, which will be identified based upon the proposed metrics, should be based upon the critical areas that the proposed metrics evaluate. Also, the databases used to store the information regarding the competitive sourcing efforts need to

be reviewed for accuracy. The full impact of competitive sourcing cannot be evaluated if erroneous information is contained in the databases.

All remaining competitive sourcing metrics should be reviewed and, if necessary, redesigned using the methodology created by this research. The gauge clusters are applicable because they were developed for outsourcing (private sector) and the functions of the unit can be determined by Air Force Instructions.

The method used to evaluate the metrics is a effective process to determine if metrics currently in place are properly designed. The method used in this research effort is not specific to competitive sourcing documents and can be used on any metric used by the Air Force (e.g., command metrics). First, by determining which customer to focus on (base personnel, MAJCOM, or CE unit), the metrics can be reviewed for proper design. These properly designed metrics will lead to a performance measurement program that can be used to determine if the process is sustaining or improving efficiency.

Appendix A. Plan of Action and Milestone

Appendix A contains the entire table of the Plan of Action and Milestone (POAM) for PWS completionas it is found in the Cost Comparison Handbook #4. The POAM is critical in determining the time to gather workload data and metric information.

Action	Day
Planning	These actions are initiated by the CC Team leader and then the PWS Team leader assumes responsibility
Team Formation	
Choose PWS Team Leader	
Choose PWS Team Members	
Identification of Ad Hoc Advisors	
Sign Appropriate Forms (non-disclosure/non-compete)	1
Conduct Initial Team Meeting	1
Review of All Documents to Date	1-5
Assignment of Facilities, Equipment and Support Services	1-5
Overall A-76 Training	8-11
Team Building Training	8-11
POAM Development	**12 – 19**
Review All Appropriate Documents for Schedule Deadlines and Related Information	12 – 14
Prepare Draft POAM for Installation Approval	15 – 17
Revise and Submit POAM for Command Approval, as Required	18 – 19
Update POAM as Required	Monthly
Develop PWS Decision Plan	12 – 19
Develop Initial Plan	12 – 18
Request Initial Decisions	19
Document Decisions as They Are Made	12 – CC decision
Document Decisions as They Are Changed	13 – CC decision
Identify Decisions that Have Not Been Made that Are Delaying the Process	19 – CC decision
Planning Data Collection and Analysis	12 – 19
Analysis of Required Data	12 –14
Identification of Required Data	12 – 18
Identification of Where a POC May Be Required	12 – 18
Decide on Detailed Data Collection Activities and Schedules – Identifying Where Analysis and Detailed Processes Are Required	17 – 19
Identifying Activity Goals	**22 – 42**
Just-In Time Training on this Action	22-23
Initial Data Collection and Analysis	22 – 29
Data to Identify Activity Goals	22- 29
Other General Data to Write the PWS	22 – 29
Initial Data Analysis	22 – 31
Identification of the Purpose	29 – 36
Identification of the Goals	29 – 42
Developing Performance Outcomes	**29 – 56**
Just-In Time Training on this Action	29-30
Identify Additional Data Collection and Analysis	29 – 36
Performance Outcome Analysis	29 – 56
Identification of Outcome Owner	36 – 56
Verification of Purposes, Goals and Services	45 – 56
Developing Performance Measures	**36 – 73**
Just-In Time Training on this Action	36-37
Identify Additional Data Collection and Analysis	36 – 43
Select Performance Measures	36 – 73
Document Supporting Data	43 – 73

Identify Performance Measure Owner	50 –73
Document Sources and Location of Data	50 –73
Document Methodology for Completion and Management of Data	50 – 73
Identify Source of Performance Measure	50 –73
Develop Performance Standards	36 –73
Quality Standard	36-73
Timeliness Standard	36-73
Quantity Standard (Workload)	36 –73
Establish Baseline	50 –73
Verify Purposes, Goals and Outcomes	50 – 73
Write the PWS	**32 – 150**
Just-In Time Training on this Action	22-23
Document the Requirements	36 – 150
Document the Workload (Quantity Standards)	36 –150
Document the Standards (Quality and Timeliness)	36 –150
Document Other Conditions of Performance	32 – 149
Government Furnished Services	32 – 149
Government Furnished Property	32 – 149
General Information	72- 149
Publications and Forms	88– 149
Other Exhibits	88– 149
Definitions	133– 149
PWS Team Provides Input to Sections B, L and M	120 – release of RFP
Review and Revise the PWS, as Required	150 – implementation
Develop the QASP	**120 – 150**
Just-In Time Training on this Action	121-122
Identify Key Performance Indicators	120 – 125
Identify Information Sources	120 – 130
Develop Tools	120 – 135
Write the QASP	120 – 150
Revise the QASP, as Required	151 – implementation
Prepare for the Next Competition	After the decision

(A-76 Cost Comparison Handbook #4, 2000, 29-31)

Appendix B. AFCESA Operations Flight Metrics

Appendix B contains a listing of the 47 Operations Flight metrics as identified by AFCESA. This listing is a subset of all the civil engineering metrics (listed by flight) found on the AFCESA website.

ID (M-metric)	METRIC	How Measured?	Lower Limit (LL), Baseline (BL), & Upper Limit (UL)
M-1	Work Complete Emergency DSW Urgent DSW Routine DSW Measured WO	number of commitments, number completed, number of DSW backlogged	Look for trends
M-2	Open by category Emergency Urgent Routine Measured WO	number opened by category	Seek explanation of increasing number of open WO.
M-3	Completed by category Emergency Urgent Routine Measured WO	number completed by category by month	Seek explanation for decreasing number of completed WOs.
M-4	DSW Responsiveness Emergency Urgent Routine	total time to accomplish work x 100% total allowed by category	LL: 90% BL: 100% UL: 110% E: 24 hrs U: 5 days R: 30 days
M-5	Work Satisfaction Emergency DSW Urgent DSW Routine DSW	number of commitments completed on time x 100% number of total commitments	LL: 60% BL: 80% UL: 100%
M-6	Scheduled Measured WOs	total number of days to complete Wos x 100% total number of days scheduled to complete WOs (estimated completion date - start date)	LL: 90% BL: 100% UL: 110%
M-7	WO life cycle (receipt to completion by category) Emergency DSW Urgent DSW Routine DSW	number of WOs in different time frequencies (0-30 days, 30-60 days, etc.) for routine and in-service DSW & WO	Look at increasing frequency of WOs within the different time periods. E: 24 hrs U: 5 days R: 30 days

M-8	Backlog Total and by Zone by category	number of WOs received *vs.* number of WOs completed	Look for explanation of increasing backlog.
M-9	Satisfaction	Questionnaire asking customers about service. Use 7-point Likert scales where 1 is bad service and 7 is good service. Use approximately 20-25 questions and have at least 1/3 of customers complete questionnaire.	LL: average of questions = 1 BL: average of questions = 4 UL: average of questions = 7
M-10	RWP Hrs by Zone/Horizontal	number of hours expended x 100% number of hours scheduled	LL: 90% BL: 100% UL: 110%
M-11	RWP Schedule Effectiveness by Zone/Horizontal	number of RWP completed x 100% number of RWP scheduled	LL: 90% BL: 100% UL: 110%
M-12	RWP Items completed by month	number of RWP items completed	Look for decreasing number of RWP items
M-13	Pest Management	number of commitments completed on time number of commitments	LL: 90% BL: 100% UL: 110%
M-14	All type WO - job stoppage customer delays awaiting materials awaiting man-hours	WO time line plotted and gaps identified for job stopages with reason (need to get an average over all WOs)	Look at long work stoppage and explanations for stops
M-15	Planning metric (Workhour Variance: Est vs. Actual Work Hours)	number of estimated hours x 100% actual work hours	LL: 90% BL: 100 UL: 110%
M-16	Delinquent WO by work order category Emergency DSW	number of WOs not completed allowed time x 100% number of WO in category for the month	LL: 0% BL: 10% UL: 25%

	Urgent DSW Routine DSW		
M-17	Material Received on Time by Category Emergency Urgent Routine	number of WOs material complete within allowed time x100% number of WOs in category for the month	LL: 0% BL: 10% UL: 25%
M-18	Number of Material Complete WO	number of WOs that are material complete based on material completion date, number of estimated hours for WO	Look for increasing number of material complete WOs.
M-19	Number of Days Material Complete	number of WOs broken into number of days categories (0-30 days, 30-60 days, etc.)	Look for increasing frequency of WOs in extended time categories.
M-20	Bench Stock Availability	number of days available in bin for month x 100% total number of bin days	LL: 60% BL: 80% UL: 100%
M-21	Material Control Metric Time from 1st ordered to last received	[(item with earliest bill of material order date) - (item with latest received date)] averaged across all WO	LL: base established BL: command average UL: base established
M-22	Material Lead Time	count number of WOs using date of last item received stratified by age: 0-30 days, 31-60 days, etc.	LL: command average BL: command average UL: command average
M-23	Residue Material	$ value of material in residue plotted against previous FY average	Look for explanation of increasing residue as potential poor planning or stopped jobs.
M-24	Planning Metric (Amt of material ordered after WO start)	number of items added after BOM firmed & WO start x100% (number items ordered)]	LL: 0% BL: 10% UL: 20%
M-25	Time from Mtl Complete to Work start	[(Material Complete date - first Labor Charged date) for all WO]/ number of WOs	LL: base established BL: base established

			UL: base established
M-26	Inventory Accuracy Rate (randomly selected items)	number of incorrect inventory counts / number of sampled inventory items	LL: 0 BL: 5% UL: 10%
M-27	Inventory Unavailability	number of items not provided for jobs when inventory in mgt system stated should have item	LL: 0 BL: base established UL: base established
M-28	Planning Backlog	number of WOs in planning	LL: base established BL: base established UL: base established
M-29	Facility Surveys Completed	number of facility surveys completed x 100% / number of facility surveys scheduled	LL: 80% BL: 90% UL: 100%
M-30	Labor Utilization broken down by work category (emerg, urgent, training, etc.) for each Zone	training % = hrs formal training (LUCs 20 & 32)/total direct hrs RWP % = hrs RWP (LUC 11) / total direct hrs DSW % = hrs on DSW (LUCs 12, 14, 15, 16)/ total direct hours Operations % = hrs operations (LUC 19)/ total direct hours Infrastructure WO % = hrs spent on infrastructure W/Os (LUCs 15 & 18)/ total direct hours Customer WO % = hrs customer WOs/ total direct hours 100 = sum of all above	Look for explanation of spikes in any category. Base should establish acceptable percentages of each category.
M-31	Availability Rate	number of direct labor hours by month x 100% / number of total labor hours	LL: 7% BL: 85% UL: 95%
M-32	Total WOs by location in process	number of WO in each work process step (planning, mat cntl, scheduling, etc.)	Look at backlogged areas for explanation or potential problems.
M-33	Personnel	number of personnel authorized x 100% / number of personnel assigned	LL: 80% BL: 90% UL: 100%
M-34	Self-Help Customers	number of customers *vs.* previous FY	Look for explanation of increasing or decreasing trends.
M-35	Self-Help Expenditures	targeted $ self-help expenditures *vs.* actual $ self-help	Look at trends

M-36	Project Review Turnaround	number of projects reviewed on time *vs.* late	Look at increasing trend of late projects
M-37	WO/Completed Projects awaiting As-Built Update	number of WOs completed requiring as-built updates	Look at trends of increasing backlog
M-38	EMCS Reliability	number of hours EMCS systems operational x 100% number of hours in period	LL: 80% BL: 90% UL: 100%
M-39	Operational Systems Fire panels Transceivers Security systems	[number of systems not fully operational (based on open WO)] / [Total number of systems]	LL: 80% BL: 90% UL: 100%
M-40	Alarm Systems WOs Emergency Urgent Routine	number of WOs *vs.* number of delinquent WOs	Look at trends in delinquency
M-41	Roofing	number of roofs identified as bad *vs.* number completed *vs.* number under contract	Look at trends in bad roofs not complete or under contract.
M-42	Utility Outages Power Water Gas Sewage	number of outages scheduled *vs.* other cause (weather, AF breakage, system failure, contractor breakage) -- break out by other causes	Look at increasing trend in other cause outages. May reflect poorly updated as-builts, need for new systems, etc.
M-43	Generator Operatability	[(number of units x number of days in month) - number of days generators out of service]/[number of units x number of days in month]	LL: 80% BL: 90% UL: 100%
M-44	Aircraft Arrest System Operatability	number of engagements number of attempts	LL: 90% BL: 95% UL: 100%

M-45	Utility Breaks Water Sewer Gas	number of utility breaks by utility	Look at trends for possible systems that need replacing or increased maintenance.
M-46	Utility Breaks Repaired by (Gov't, contractor) Water Sewer Gas	number of breaks repaired source	Increasing contractor breaks indicates potential poor as-builts.
M-47	Appliance Backup Stock	number of backup per appliance type	Provides guidance on when backups should be ordered.

(Operations Metrics, 2001, n. pag.)

Appendix C. Standard and Metric Lines

Appendix C contains the list of 161 standards and metrics specific to Operations Flight used in this research effort. The standards and metrics are from PWS and QASP documents from eight Air Force Bases. They are in no particular order. The standards and metrics are verbatim from the data that was found in the documents. Many of the acronyms are not defined because they did not impact the design of the metric.

Notes:
IQL=10% (15%): Indefinite Quality Level; first variable is the percentage error the service provider is held to after the first month of service. The second variable is the percentage error for the first month of service.

Any portion of the information left blank in the documents, the corresponding field (e.g., threshold or surveillance) was left blank in the appendices.

Lot is the number that will be sampled in the given time period.

Sample size is the number that will be reviewed in the given time period.

PR = 0 (1): Performance Requirement; first variable is the number of errors the service provider is held to after the first month of service. The second variable is the number of errors for the first month of service.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
1	Provide Production Control that is Professional and Courteous at all times.	0 Defects. Lot is number of calls received or verbal requests taken monthly.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Customer Satisfaction
2	Provide Production Control that properly classifies work IAW SOW.	1 Defect. Lot is number of work orders processed through service calls or verbal requests taken monthly	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality
3	Provide Production Control having an average turn around time, date of request to date of receipt by customer of work order approval/nonapproval, 2 weeks or less	1 Defect. Lot is number of written work requests received in a month.	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/ Schedule
4	The proper classification of work	1 Defect. Lot is number of written work requests received in a month.	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality
5	Emergency Work Requests: 30 minutes (duty hours)/1 hour (non-duty hours); completed (safed) in 24 hours.	100% of the time	Records Review or Customer Contact, at least 1/week	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/ Schedule
6	Urgent Work Requests: Completed in 5 days	98.5% of the time	Records Review or Customer Contact, at least 1/week	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule

7	Routine Work Requests: Completed in 30 days	95% of the time	10% Reviewed monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
8	Service calls received and documented IAW requirements of PWS.	1 DEFECT ALLOWED. Lot is # of service calls received during the month	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
9	Backlog. Control the backlog of approved work requests/work orders.	No more than 10% of all work will be backlogged.	End of month record review. Validate at least one completion date with customer	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
10	Operate, maintain, and repair Power Conditioning and Continuation Interface Equipment (PCCIE). *(*mission critical item)*	System mission impacting utility failure will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
11	Operate, maintain, repair, installation, safe start-up control, and shutdown of power distribution system, and mechanical systems, ancillary systems, and power distribution systems. (*mission critical item)	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

12	Operate, maintain, control and monitor utility systems and system alarms. *(*mission critical item)*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
13	Operate, maintain, test, and repair water supply and distribution systems, telemetry, storage, pumping, valves, controls, filters, treatment, and related installed and standby equipment.	94% of all inspection and operation tests will be completed on time. The remaining 6% will be completed within 5 working days of scheduled date.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
14	Operate, maintain, and repair water supply and distribution systems, storage, pumping, valves, controls, filters treatment, and related installed and standby equipment. *(*mission critical item)*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

15	Operate, maintain, and repair mechanical systems to ensure temperatures/ humidity to the mission critical centers are within mission equipment parameters. *(*mission critical item*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
16	Develop and operate an RWP to provide for the complete preventive maintenance of all real property.	95% of all work completed on time	Periodic review of contractor records	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
17	Material Safety Data Sheets (MSDS). Upon receipt of material, the contractor shall establish and maintain the required MSDS for materials and forward to the appropriate section.	MSDS's are available for all material within 15 working days of receipt.	Periodic review of contractor records	1.4, Conducts all activities in compliance with applicable safety laws, codes, and directives	Work Product Delivered
18	A responsible member will attend all meetings of base activities involving Civil Engineering Ops interests where Ops is the OPR.	1 missed meeting. Lot is the number of scheduled meetings during the month requiring Civil Engineering Operations personnel.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
19	Meeting Attendance: Ensure contractor representation at all meetings IAW SOW.	90% of the time, measured in monthly intervals.	Weekly periodic reviews of contractor records and reports	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

20	Provide agendas two work days in advance to meeting attendees and develop any visual aids necessary to conduct the meeting	1 missed meeting. Lot is the number of scheduled meetings during the month requiring Civil Engineering Operations personnel.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Work Product Delivered
21	Ensure sufficient number of 2-way radio batteries are adequately charged to keep all CE radios operational at all times	0 Defects Lot is number of radios in CE during the month.	Checklist	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels
22	Manage and properly care for all assigned vehicles IAW AFM 77-310.	1 Defects. Lot is number of Civil Engineering vehicles listed in Government Furnished Equipment, Vehicles and Facilities	Customer Complaint	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels
23	Conduct an analysis of all workorders having a 10% or greater difference between planned and estimated hours.	1 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/ Schedule
24	Provide a copy of the analysis to the QAE, within one week of receipt of Work Order Variance Report	2 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/ Schedule

25	Provide Material Control Support all CE functions Items are requisitioned and stored IAW AFM 67-1,AFR 85-61 and DODR 4145.19. Average Days to Firm shall not exceed 2 days. Notification of Material Complete Work Orders must be tracked to other than Material Control NLT 2 days.	0 Defects. Lot is number of transactions per month.	Management Information System	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/ Schedule
26	Provide store stock to insure material is on hand to perform required maintenance	4 Defects. Lot is number of line items in Store Stock.	Random Sampling	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Operational Service Levels
27	Provide a specified percentage of total appliances on hand as back-up stock.	0 Defects. Lot is a specified percentage of appliances as stipulated in AETC policy letter	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Operational Service Levels
28	Establish, maintain and operate a Self Help store	2 Defects. Lot is the number of customers serviced monthly.	Customer Complaint	1.8, Establishes a system to provide customers the capability to accomplish work requirements using their own resources	Operational Service Levels
29	Provide work plans to ensure ordering of proper materials and craftsmen have proper details to complete the job within 10% of estimates	0 Defects. Lot is number of work orders completed monthly.	Checklist	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
30	Maintain real property to a standard commensurate with design criteria and accepted industry standards.	2 Defects. Lot is number of Emergency, Urgent, Routine, & Minor Construction unplanned work orders completed in a month.	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

31	Unplanned Work. Maintain a completion rate that meets or exceeds command standards for unplanned work orders.	0 Defects. Lot is number of unplanned workorders in a month.	Management Information System	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
32	Provide economical maintenance and repair of facilities.	1 Defect. Lot is number of planned work orders completed in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/ Budget
33	Work shall meet all State codes and accepted industry standards.	1 Defect. Lot is number of planned work orders completed in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality
34	Maintain a Planned Work Order completion rate that meets or exceeds command standards for programmed work orders.	0 Defects. Lot is number of planned work orders programmed and inserted in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
35	Perform Recurring Work to a level commensurate with industry standards and manufacturers data	3 Defects. Lot is number of RWP items monthly.	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality
36	Maintain a Completion Rate that meets or exceeds the command standard for critical and non-critical RWP.	0 Defects. Lot is number of RWP items scheduled monthly	Management Information System	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule

37	All required reports and schedules are provided on time	1 DEFECT ALLOWED. Lot is total # of reports and schedules required each month.	100% Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/ Schedule
38	All reports and schedules are provided in the form/format prescribed in PWS	1 DEFECT ALLOWED. Lot is total # of reports and schedules required each month.	100% Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality
39	Maintenance folder shall be maintained for each facility. All work/inspections accomplished on the facility shall be documented in the folder	0 DEFECTS ALLOWED. Lot is total # of facility files to be maintained by the contractor.	Monthly Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
40	Real Estate Management: Records are maintained to account for all Air Force Real Property.	95% of the time, measured on a monthly interval.	Periodic review of 25% of the documentation	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
41	Records are entered into the Real Property database within 30 days after receipt of the final and complete transaction document.	95% of the time, measured on a monthly interval.	Periodic review of 25% of the documentation	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/ Schedule
42	All hanger doors and their mechanical and electrical systems shall be kept in operation and in good repair. All recurring maintenance and inspections are accomplished IAW PWS.	1 DEFECT ALLOWED. Lot is # of hanger doors.	100% Inspection	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

43	Improved grounds maintained at those frequencies listed in PWS.	1 DEFECT ALLOWED. Lot is total area of improved grounds.	Customer Complaint	1.6, Provides base support services	Operational Service Levels
44	Semi- improved grounds maintained at those frequencies listed in PWS	1 DEFECT ALLOWED. Lot is total area of semi -improved grounds.	Customer Complaint	1.6, Provides base support services	Operational Service Levels
45	Inspect and Service Buildings and Sites for insect/rodent infestation. Buildings and sites inspected and serviced per Schedule.	1 DEFECT ALLOWED. Lot is # of buildings or sites required to be inspected/serviced during the month.	100% Inspection	1.6, Provides base support services	Operational Service Levels
46	Carcasses are disposed of on time.	0 DEFECTS. Lot is # of carcasses removed per month.	100% Inspection	1.6, Provides base support services	Time/ Schedule
47	Perform all generator maintenance recommended by the manufacturer; perform inspections, tests and maintenance IAW PWS	0 DEFECTS ALLOWED. Lot is # of generators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
48	Components of water distribution system shall be inspected, tested/maintained IAW PWS	2 DEFECTS ALLOWED. Lot is total # of individual components of water distribution system to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
49	Lift Stations shall be inspected and maintained IAW PWS	0 DEFECTS ALLOWED. Lot is number of lift stations	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

50	All gate valves, pressure relief valves, and regulators are inspected on time.	0 DEFECTS ALLOWED. Lot is total # of gate valves, pressure relief valves and regulators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
51	All gate valves, pressure relief valves, and regulators are kept mechanically operable	0 DEFECTS ALLOWED. Lot is total # of gate valves, pressure relief valves and regulators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
52	All gate valve, pressure relief valve, and regulator log entries are complete, accurate and up to date.	0 DEFECTS ALLOWED. Lot is total # of gate valves, pressure relief valves and regulators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
53	Boilers shall be operated 24 hours per day, seven days per week during heating season.	2 DEFECTS ALLOWED. Lot is total # of boilers.	Customer Complaints	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
54	Boilers shall be maintained IAW PWS	2 DEFECTS ALLOWED. Lot is total # of boilers.	Customer Complaints	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Quality
55	All permanent filters are cleaned and all throw-away filters are replaced quarterly IAW PWS	2 DEFECTS ALLOWED. Lot is total # of filters.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

56	Storage tanks, valves, appurtenances, and piping are inspected and maintained IAW PWS. Tanks/piping are free of leaks & corrosion, and all components are operating properly.	0 DEFECTS ALLOWED. Lot is total # of storage tanks.	Monthly Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
57	All debris and dust are swept from airfield pavements at frequency specified in PWS.	0 DEFECTS ALLOWED. Lot is # of times airfield pavements are swept per month.	Weekly Inspection	1.6, Provides base support services	Operational Service Levels
58	Quality Control: Effective Quality Control operation ensuring SOW standards are met. Performance deficiencies are identified and corrected IAW the FD approved Quality Control program. Inspections are conducted as scheduled IAW FAR 52246-4 for guidance.	95% of the time, measured in monthly intervals.	weekly review of at least 10% of the contractors' reports	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality
59	Unit Cost, Revenue, Expenses, and Performance Data: Collect, review, and submit required data IAW established schedule.	95% of the time, measured in monthly intervals.	Periodic review of plans	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/ Schedule
60	Infrastructure Condition Index: Compile data and submit to AFMC.	Update and submit by HQ established due date 95% of the time, measured on an annual basis.	Review 50% of submitted documents	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

61	Infrastructure Programs: Manage, maintain, and implement infrastructure programs within 30 days IAW the approved master schedule.	Less than 5% deviation, measured semi annually (Every 6 months).	Periodic review of contractor interface with customers; review of infrastructure master schedule	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
62	Facility and Infrastructure Support: Provide timely maintenance and repair of base facilities and infrastructure. .	92% of the time, measured on a weekly interval.	Periodic monitoring of 10% of the daily work accomplished, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
63	Perform maintenance and repair work to a level commensurate with industry standards and manufacturer's data	92% of the time, measured on a weekly interval.	Periodic monitoring of 10% of the daily work accomplished, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality
64	Perform maintenance and repair work to a level commensurate with established SOW timelines	92% of the time, measured on a weekly interval.	Periodic monitoring of 10% of the daily work accomplished, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
65	Direct Scheduled Work (DSW) Response: Respond on scene to emergency DSW's within one (1) hour during normal duty hours and two (2) hours during all other hours.	95 % of the time, measured on a weekly basis.	100% monitoring of emergency response times. Customer complaints	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/ Schedule

66	DSW Completion: Complete DSW's IAW AFI 32-1004v3 time frame.	Properly executed 90% of the time, on a weekly basis.	Daily monitoring of DSW accomplishments, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality
67	DSW Completion: Complete DSW's IAW AFI 32-1004v3 time frame.	Timely resolution 90% of the time, on a weekly basis.	Daily monitoring of DSW accomplishments, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
68	Work Order Execution: Complete approved work orders (between 50 to 250 man-hours) within 10% of approved cost.	Properly executed 95% of the time, measured on a monthly interval.	Periodic monitoring of 20-40% of approved work orders, customer complaints	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
69	Work Order Execution: Complete approved work orders (between 50 to 250 man-hours) within 10% of approved cost.	Timely resolution 95% of the time, measured on a monthly interval.	Periodic monitoring of 20-40% of approved work orders, customer complaints	1.2, Provides trained personnel and technical expertise to support operations worldwide	Finance/ Budget
70	Grounds Maintenance: Maintain base grounds IAW industry standards and SOW requirements.	No more than 5% deviation from approved schedule without FD approval, measured on a monthly interval.	Continually evaluation of VIP routes, periodic inspections of non-VIP routes, customer complaints	1.6, Provides base support services	Quality

71	Refuse Collection: Collect and dispose of waste (After contractor assumption of tasks Oct 2001). Refuse is picked up and disposed of IAW with SOW standards and schedules.	Properly executed. Pick up schedule deviation is less than 5%, measured on a monthly basis.	Periodic evaluation for cleanliness of at least 10% of the affected areas. Customer complaints	1.6, Provides base support services	Operational Service Levels
72	Refuse Collection: Collect and dispose of waste (After contractor assumption of tasks Oct 2001). Refuse is picked up and disposed of IAW with SOW standards and schedules.	Completed on time. Pick up schedule deviation is less than 5%, measured on a monthly basis.	Customer complaints	1.6, Provides base support services	Time/ Schedule
73	Maintain base real property, accountable real property installed equipment (RPIE), and civil engineering responsibility non-RPIE items (e.g. dorm furniture, microwaves, appliances, etc.).	100% of taskings shall meet established suspense's with no more than 5% requiring correction.	Review monthly metric(s) and customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

74	Infrastructure Provide: operations, maintenance (including recurring maintenance), repair, alteration, and management services for all facilities, systems, pavements, fences, signs, culverts, ditches, landscaping (excluding work performed by contractor), grounds and utilities; infrastructure management; energy conservation and cost reduction program, and building demolition.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
75	Manage workload within budgetary constraints and in keeping with engineering life cycle cost rationale.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/ Budget
76	On-site response to emergency work orders	Within 30 minutes, 100% of the time (except AFWA and STRATCOM). Mitigate condition to Urgent or better within 24 hours of original notification 100% of the time.	Customer complaint.	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/ Schedule

77	On-site response to urgent work orders within 1 workday	95% of the time and within 2 work days 100% of the time. If required materials are not on-hand, order required materials within 7 calendar days, 100% of the time. Mitigate condition to routine status or better within 7 calendar days after required materials are available 100% of the time.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
78	Complete routine work orders within 30 days of notification or receipt of material. Material requirements must be processed within 14 calendar days of receipt 100% of the time.	95% of the time	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
79	Process work requests that have been prioritized and approved by designated government official.	Valid customer complaints shall not exceed 5% of total work orders accomplished.	Review monthly metrics and records.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
80	Determine scope, method, type of resources, and estimate the quantity of resources needed.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
81	Install equipment and systems to meet all manufacturer installation specifications.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint. Review records for results and ensure results are reported within stated expectation.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality

82	Airfield and base pavements remain capable of supporting Emergency War Order aircraft launches during and after snowfalls/ice accumulation	100% of the time.	Customer complaint.	1.6, Provides base support services	Operational Service Levels
83	Identify, update, and ma intain in the Civil Engineer Material Acquisition System (CEMAS), or any successor system, all material and service purchases required to perform workload.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
84	Pest Control Services: Develop and comply with the IPM Plan, approved by the government. Plan developed, submitted, and approved on time.		Review Quarterly Metrics	1.6, Provides base support services	Time/ Schedule
85	Record daily pesticide usage and report usage quarterly to ACC.		Review Quarterly Metrics	1.6, Provides base support services	Work Product Delivered
86	Record daily pesticide usage and report usage quarterly to ACC.	Reduce yearly pesticide consumption 50% in compliance with 1993 DOD baseline study.	Review Quarterly Metrics	1.6, Provides base support services	Productivity
87	Elevators and all other personnel/property lifts including cranes and hoists meet all requirements outlined in ANSI/ASME Safety Codes.	Maintenance and repair services must conform to all applicable standards and codes 100% of the time.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

88	Utilize NFPA guidance to perform hydrant flow testing for approximately 211 fire hydrants in the Capehart housing area (60 of these flow tested annually) and 192 fire hydrants on the main base property (75 of these flow tested annually).	Records updated and filed within 10 workdays after completion of tests 100% of the time.	Customer complaint. Records review to ensure results are reported and within stated expectations	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Time/ Schedule
89	All services and functions provided to all facilities, systems, equipment and utilities shall be ready to the user	100% of the time.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
90	Scheduled utility outages coordinated with users.	100% of the time	Customer complaint and records review.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Customer Satisfaction
91	Reduce annual base-wide energy consumption	Reduce by an average of 2% per year to the federally mandated reduction of 35% from calendar year 1985 baseline by calendar year 2010	Review energy consumption metrics to determine if trends will meet reduction goals.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity
92	Defense Utility Energy Report System (DUERS) reports sent to higher headquarters monthly on time.	100% of the time	Monitor customer complaints from ACC.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Time/ Schedule

93	Defense Utility Energy Report System (DUERS) reports properly documented	Less than 5% returned due to errors.	Monitor customer complaints from ACC.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Quality
94	Preventive Maintenance. Develop and utilize a preventive maintenance (PM) or recurring work program (RWP) to minimize repair, and replacement cost, interruption of service, enhance system reliability, and extend the life cycle of RPIE.	90 % of scheduled preventive maintenance is accomplished during the scheduled maintenance period. Remaining PM shall be carried forward to the next month and completed then.	Customer complaint and records review.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
95	The contractor shall comply with all Quality Control requirements IAW the standards identified in the PWS	PR 0 (1)	100% Inspection	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality
96	The contractor shall comply with all Work/Request Order Management requirements IAW the standards identified in the PWS	Lot Size =2636 Estimated Work Orders per month Sample Size = 27 PR =2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
97	The contractor shall comply with all In-Service Work Management requirements IAW the standards identified in PWS.	Lot Size = 22 Estimated work days per month PR = 2 (3) PR	Periodic Surveillance	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

98	The contractor shall comply with all RWP requirements IAW the standards identified in PWS.	Lot Size = 500 Scheduled tasks per month Sample Size = 27 PR =2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
99	The contractor shall comply with all Energy Management Systems requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size = 32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
100	The contractor shall comp ly with all Industrial Electric requirements IAW the standards identified in PWS.	Lot Size = 266 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
101	The contractor shall comply with all Generators requirements IAW the standards identified in PWS.	Lot Size = 25 Estimated Scheduled and unscheduled tasks PR = 2 (3)	Periodic Surveillance	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
102	The contractor shall comply with all Aircraft Arresting Barriers requirements IAW the standards PWS.	Lot Size = 40 Estimated Scheduled and unscheduled tasks PR = 1 (2)	Periodic Surveillance	1.13, Provides effective logistics support	Operational Service Levels
103	The contractor shall comply with all Liquid Fuels Maintenance requirements IAW the standards identified in PWS.	Lot Size =33 Estimated Work Orders per month PR = 1 (2)	Periodic Surveillance	1.13, Provides effective logistics support	Operational Service Levels

104	The contractor shall comply with all Airfield Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 22 Estimated days per month PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels
105	The contractor shall comply with all Improved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 141 Areas identified on the contractors schedule Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.6, Provides base support services	Operational Service Levels
106	The contractor shall comply with all Enhanced Improved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 57 Areas identified on the contractors schedule Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.6, Provides base support services	Operational Service Levels
107	The contractor shall comply with all Semi Improved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 28 Areas identified on the contractors schedule PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels
108	The contractor shall comply with all Unimproved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 38 Areas identified on the contractors schedule PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels
109	The contractor shall comply with all Equipment Maintenance requirements IAW the standards identified in PWS.	Lot Size =23 Estimated number of repairs per month PR = 2 (3)	Periodic Surveillance	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

110	The contractor shall comply with all Pavements requirements IAW the standards identified in PWS.	Lot Size = 75 Estimated scheduled and unscheduled tasks per month Sample Size 26 PR = 2 (3) IQL 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
111	The contractor shall comply with all Equipment Support requirements IAW the standards identified in PWS.	Lot Size = 75 Estimated scheduled and unscheduled tasks per month Sample Size 26 PR = 2 (3) IQL 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
112	The contractor shall comply with all Drainage Systems requirements IAW the standards identified in PWS.	Lot Size =26 Estimated scheduled and unscheduled tasks per month PR = 2 (3)	100% Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
113	The contractor shall comply with all Fencing and Gates requirements IAW the standards identified in PWS.	Lot Size =19 Estimated Work Orders per month PR = 2 (3)	Periodic Surveillance	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
114	The contractor shall comply with all Sweeping requirements IAW the standards identified in PWS.	Lot Size = 22 Estimated number of days per month PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels
115	The contractor shall comply with all Equipment Maintenance requirements IAW the standards identified in PWS.	Lot Size =50 Estimated number of repairs per month PR = 2 (3)	Periodic Surveillance	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

116	The contractor shall comply with all Snow and Ice Control requirements IAW the standards identified in PWS.	Lot Size = 65 Estimated map areas identified during S&IC operations Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.6, Provides base support services	Operational Service Levels
117	The contractor shall comply with all Snow Removal Readiness requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of snow equipment. Occurs once annually PR = 1 (2)	100% Inspection	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels
118	The contractor shall comply with all Airfield Lighting Systems requirements IAW the standards identified in PWS.	Lot Size = 31 Estimated number of scheduled and unscheduled tasks per month PR = 0 (1)	100% Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
119	The contractor shall comply with all Interior Electric requirements IAW the standards identified in PWS.	Lot Size = 385 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
120	The contractor shall comply with all Plumbing requirements IAW the standards identified in PWS.	Lot Size = 463 Estimated Work Orders per month. Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
121	The contractor shall comply with all Carpentry requirements IAW the standards identified in PWS.	Lot Size = 330 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

122	The contractor shall comply with all Masonry requirements IAW the standards identified in PWS.	Lot Size = 150 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
123	The contractor shall comply with all Painting requirements IAW the standards identified in PWS.	Lot Size = 115 Estimated Work Orders per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
124	The contractor shall comply with all Locks requirements IAW the standards identified in PWS.	Lot Size = 269 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
125	The contractor shall comply with all HVAC requirements IAW the standards identified in PWS.	Lot Size = 138 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
126	The contractor shall comply with all Metals requirements IAW the standards identified in PWS.	Lot Size = 72 Estimated Work Orders per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
127	The contractor shall comply with all Asbestos Abatement requirements IAW the standards identified in PWS.	Lot Size =27 Estimated Work Orders per month PR = 1 (2)	100% Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels
128	The contractor shall comply with all Material Acquisition requirements IAW the standards identified in PWS.	Lot Size = 500 Estimated Work Orders tracked to MAT per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Operational Service Levels

129	The contractor shall comply with all Self - Help requirements IAW the standards identified in PWS.	Lot Size = 126 Estimated Work Orders tracked to Self - Help per month PR = 2 (3)	Periodic Surveillance	1.8, Establishes a system to provide customers the capability to accomplish work requirements using their own resources	Operational Service Levels
130	The contractor shall comply with all Exterior Electric requirements IAW the standards identified in PWS.	Lot Size = 150 Estimated number of scheduled and unscheduled tasks per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
131	The contractor shall comply with all Water Treatment requirements IAW the standards identified in PWS.	Lot Size =54 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
132	The contractor shall comply with all Water Distribution requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
133	The contractor shall comply with all Gas Distribution requirements IAW the standards identified in PWS.	Lot Size = 6 Estimated number of occurrences per month PR = 2 (3)	100% Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
134	The contractor shall comply with all Heating Plants Operations requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size = 32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

135	The contractor shall comply with all Preventive Maintenance requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
136	The contractor shall comply with all Heating Plants Operations requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size = 32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels
137	The contractor shall comply with all Satellite Plants Operations requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size =32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
138	The contractor shall comply with all Satellite Plants Maintenance requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels
139	The contractor shall comply with all Heating Distribution requirements IAW the standards identified in PWS.	Lot Size =100 Estimated scheduled and unscheduled tasks per month Sample Size =32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

140	Measure the unit cost per square foot for all the facilities used by or maintained by the service provider. Costs shall include all direct and indirect costs associated with the Service Provider effort to satisfy the PRD. Costs per square foot will be calculated by dividing the total cost of the services provided by the total square feet. This metric shall not include the costs of utilities.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/ Budget

141	Measure the unit cost per occupant to maintain and operate the facilities used or maintained by the service provider (SP). Costs shall include all direct and indirect costs associated with the SP's effort to satisfy the PRDs. The metric will be calculated by dividing the service provider's total monthly costs by the total number of base occupants including all employees (civilian, military and contractor), all permanent residents of the base and TDY individuals. This metric shall not include the costs of utilities.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/ Budget
142	Measure the critical asset downtime. The measurement will include all scheduled and unscheduled downtime. The scheduled and unscheduled downtime will be represented by two separate items on the metric.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	

143	Measure the percentage of unscheduled work performed on the installation as a portion of total work performed. Unscheduled work is defined as any work the service provider or the Program Management Office has not foreseen.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Operational Service Levels
144	Measure the difference between budgets and actuals. Budget variance is a measurement of the difference between the programmed dollar amount and the actual final dollar amount of the reporting period. The total variance will be calculated for each reporting period. The differences shall be indicated mathematically as a percentage to develop a performance rate of increase or decrease. This information will provide an indicator of the Service Providers efficiency.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/ Budget

145	Measure the average schedule variance. Schedule variance is a measurement of the difference between scheduled completion dates and actual completion dates. The differences shall be shown in days. This information will provide an indicator of the Service Providers efficiency. This metric shall show the average schedule variance for all the projects in the reporting period.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/ Schedule
146	Report the average cycle time it takes the Service Provider to provide reasonable answers to customers requests.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/ Schedule
147	Measure the number of compliance citations the Service Provider receives.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

148	Measure the number of times the Service Provider was not timely on coordination/input of documents. Timeliness is measured by meeting the requirements of DoD Instruction 4000.19 or AFI 25-201.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/ Schedule
149	Measure the number of billing disputes reported by reimbursable base customers. Billing disputes are problems reimbursable customers have with how much they are being charged for their utility consumption (water, electricity, gas). Since the cost of a bill is based upon consumption, the Energy Management function must recalculate the consumption in question to verify if the dispute is valid. Valid disputes (i.e., the customer was over charged for their actual utility consumption) will be tracked and reported via this metric.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/ Budget

150	Measure/track the overall cost of utilities per square foot of buildings. This is accomplished by dividing the total cost of a utility by the gross square footage of facilities on the entire base. Example: We spent $5,958,108 on electricity in FY98 and had a gross square footage (of buildings) of 7,434,170. $5,958,108/7,434,170 results in $0.80144/sf for electricity. The metric will have three columns; one for electricity, one for gas, and one for water.	The goal is to show a decline in total energy costs per square foot.	Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

151	Measure the total annual British Thermal Unit (BTU) consumption per gross square foot compared to the 1985 baseline. The metric will be tracked and presented on a monthly basis to identify trends and get a prediction for meeting the annual reduction goal. Water is the exception. Water is reported in Millions of Gallons per gross square foot (Mgal/sf) reduction. The metric will have three columns for each month; one for electricity, one for natural gas, and one for water.	FY 1985 is the baseline chosen by the United States Congress.	Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

152	Provide a trend analysis for the total maintenance cost based on maintained facility square footage (i.e., dollars per total building area, $/SF). Individual metrics should be developed for (1) labor, (2) material, and (3) total cost for maintenance and repair divided by the total maintained building square footage. Maintenance cost is the cost incurred by the service provider for performing maintenance and repair work. The area of buildings shall be for total maintained building square footage.		Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/ Budget
153	Measure the effective utilization of manpower. Scheduled work (opposed to indirect or unscheduled work) is the number of man-hours planned and scheduled to accomplish repair and maintenance work associated with preventive maintenance, Direct Schedule Work (DSW), planned Work Orders, and operations.	This will be compared to the total number of man-hours available; the closer to 100% the better. The scheduled work % will be presented on a monthly basis to track how well the provider's work plan was implemented. A large percentage of unscheduled work may give the appearance that the service provider is being "reactive" versus "proactive".	Monthly	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels

154	All emergency direct scheduled work (DSW) requirements must be completed within 24 hours of notification	98% of all emergency DSW	Monthly	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/ Schedule
155	urgent DSW requirements must be completed within 7 calendar days	98% of all urgent DSW	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
156	All routine DSW requirements must be completed within 30 calendar days	95% of all routine DSW	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule
157	All measured work orders (or planned work orders) must be completed by the estimated commitment date.	85% of all measured work orders (or planned work orders)	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule

158	Measure the number of unscheduled outages of all critical systems. Critical systems include electrical distribution, runway lighting, water, natural gas, HVAC (heating, ventilating, & air conditioning), steam, and chill water systems. An outage can be defined as any interruption to the particular service or system that was not the result of a coordinated/planned outage for system repairs or upgrades. Outages shall be tracked by facility and systems.		Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

159	Measure the mean time between failures of facility components, systems, and real property installed equipment (RPIE). The metric will serve as an indicator of facility components, systems, and RPIE that may be reaching their service life or need replacing, overhaul or maintenance action. Facility components, systems, and RPIE include roofs, HVAC, HVAC controls, plumbing, electrical systems, elevators, fire alarms, and fire suppression systems. RPIE is equipment that is permanently attached and is not considered unique to the occupants use of the facility. The service provider will use an industrial engineering analysis to determine the criticality associated with the time duration between each system's failure (i.e., 1-month between failures of a building's HVAC system may be a strong indicator of the need to replace the system; where 1-year between failures of a building's fire alarm may be necessary before any action is taken).		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

160	The service provider will be expected to maintain a professional appearance of all sites, roads, airfield pavements, parking areas, etc. Any deviation from this professional level of service (e.g., complaints of pot holes, low areas holding water on the flightline, spalls on the airfield, accumulation of debris on streets/pavements, higher counts than threshold limits for mosquito population, etc.) will be counted as a data point in this metric. An incident is the first time that an event is brought to the attention of the service provider. A complaint is dissatisfaction with the fix or a lack of response to the incident. This metric will have two columns; one for an incident and one for complaints.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality
161	Mitigate emergency work requests within 24 hours and complete within 10 calendar days	100% of the time	Monitor customer complaints from ACC.	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/ Schedule

Appendix D. 1.1 Operations Flight Functions

Appendix D contains each of the lines classified as 1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
6	Urgent Work Requests: Completed in 5 days	98.5% of the time	Records Review or Customer Contact, at least 1/week	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	The defined measure of unit is time
Sensor?	Yes	Records are ma intained
Frequency?	Yes	One per week
Understandable? (Not difficult to understand)	Yes	Review of records or contact with customer to determine time to complete urgent work requests. Threshold is obtained by dividing the number of urgent work requests completed in 5 days by the total number of urgent work requests.
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon time entered into contractor records or time obtained from customer
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
7	Routine Work Requests: Completed in 30 days	95% of the time	10% Reviewed monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	The defined measure of unit is time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly records review
Understandable? (Not difficult to understand)	Yes	Review of records to determine time to complete routine work requests. Reviewing 10% of the total number of routine records and then dividing the number of routine work requests completed in 30 days by the number of routine work requests that were reviewed will yield the threshold.
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon time entered into records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
9	Backlog. Control the backlog of approved work requests/work orders.	No more than 10% of all work will be backlogged.	End of month record review. Validate at least one completion date with customer	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of work requests/work orders
Sensor?	Yes	Number of work requests/work orders are recorded
Frequency?	Yes	Monthly records review
Understandable? (Not difficult to understand)	No	The surveillance does not agree with the threshold value. Validating at least one completion date does not appropriately determine if no more than 10% of all work is backlogged.
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment is significant because a determination must be made what constitutes a backlog (awaiting parts, low personnel, etc)
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
16	Develop and operate an RWP to provide for the complete preventive maintenance of all real property.	95% of all work completed on time	Periodic review of contractor records	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is not a defined unit of measure within the objective
Sensor?	Yes	Records are maintained
Frequency?	No	There is no set frequency, only periodic
Understandable? (Not difficult to understand)	No	The threshold does not coincide with the objective. The objective is more of an operational service level or quality type gauge cluster and the threshold is a time/schedule type gauge cluster. Therefore, they do not coincide.
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch of the objective with the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
30	Maintain real property to a standard commensurate with design criteria and accepted industry standards.	2 Defects. Lot is number of Emergency, Urgent, Routine, & Minor Construction unplanned work orders completed in a month.	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each work order will have its specific design criteria or industry standard according to the facility
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Completed work will be evaluated to determine if it meets design criteria and accepted industry standards
Quantifiable? (Reduced personal influence or judgment)	Yes	Each design criterion or accepted industry standard is established to reduce personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
31	Unplanned Work. Maintain a completion rate that meets or exceeds command standards for unplanned work orders.	0 Defects. Lot is number of unplanned work orders in a month.	Management Information System	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time to complete unplanned work
Sensor?	Yes	Data collection system
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	All unplanned work orders must be completed by the standards established by the command
Quantifiable? (Reduced personal influence or judgment)	Yes	Each unplanned work order per month is recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
32	Provide economical maintenance and repair of facilities.	1 Defect. Lot is number of planned work orders completed in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost of maintenance and repair
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Financial data is collected and reviewed to determine if the maintenance or repair is economical, but it is unclear to what the data is compared to. For instance, there is no threshold (for example, 10% over estimate) to determine what is considered a defect.
Quantifiable? (Reduced personal influence or judgment)	No	Personal influence and judgment have a significant impact upon what is economical
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mis sion

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
33	Work shall meet all State codes and accepted industry standards.	1 Defect. Lot is number of planned work orders completed in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each work order will have its state code or industry standard according to the facility
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Completed work will be evaluated to determine if it meets state codes and accepted industry standards
Quantifiable? (Reduced personal influence or judgment)	Yes	Each state code or accepted industry standard is designed to reduce personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
34	Maintain a Planned Work Order completion rate that meets or exceeds command standards for programmed work orders.	0 Defects. Lot is number of planned work orders programmed and inserted in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time to complete planned work
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	All planned work orders must be completed by the standards established by the command
Quantifiable? (Reduced personal influence or judgment)	Yes	Each planned work order per month is recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
35	Perform Recurring Work to a level commensurate with industry standards and manufacturers data	3 Defects. Lot is number of RWP items monthly.	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each work order will have its industry standard or manufacturers data according to the facility
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Recurring work will be evaluated to determine if it meets industry standards and manufacturers data
Quantifiable? (Reduced personal influence or judgment)	Yes	Each accepted industry standard and manufacturers data is designed to reduce personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
36	Maintain a Completion Rate that meets or exceeds the command standard for critical and non-critical RWP.	0 Defects. Lot is number of RWP items scheduled monthly	Management Information System	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	All non-critical recurring work orders must be completed by the standards established by the command
Quantifiable? (Reduced personal influence or judgment)	Yes	Each non-critical recurring work order per month is recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
42	All hanger doors and their mechanical and electrical systems shall be kept in operation and in good repair. All recurring maintenance and inspections are accomplished IAW PWS.	1 DEFECT ALLOWED. Lot is # of hanger doors.	100% Inspection	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each hangar door and its systems
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Each door maintained or inspected must be kept in operation and in good repair
Quantifiable? (Reduced personal influence or judgment)	Yes	Personal influence and judgment are reduced because the maintenance and repair are done IAW PWS
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects completion of mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
61	Infrastructure Programs: Manage, maintain, and implement infrastructure programs within 30 days IAW the approved master schedule.	Less than 5% deviation, measured semi annually (Every 6 months).	Periodic review of contractor interface with customers; review of infrastructure master schedule	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	The unit of measure is time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Every 6 months
Understandable? (Not difficult to understand)	No	The objective has "manage" and "maintain" functions that do not agree with the threshold of "less than 5% deviation".
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
62	Facility and Infrastructure Support: Provide timely maintenance and repair of base facilities and infrastructure.	92% of the time, measured on a weekly interval.	Periodic monitoring of 10% of the daily work accomplished, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time to complete work
Sensor?	Yes	Records are maintained
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	No	Periodic monitoring 10% of the daily work accomplished is not specific. The confusion is whether the work accomplished daily is evaluated periodically throughout the day, or whether there is periodic weekly evaluation of daily work.
Quantifiable? (Reduced personal influence or judgment)	No	Due to confusion between the threshold and surveillance. Required personal judgment of what is desired.
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
63	Perform maintenance and repair work to a level commensurate with industry standards and manufacturer's data	92% of the time, measured on a weekly interval.	Periodic monitoring of 10% of the daily work accomplished, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each work order will have its industry standard or manufacturers data according to the facility
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Periodic monitoring 10% of the daily work accomplished is not specific. The confusion is whether the work accomplished daily is evaluated periodically throughout the day, or whether there is periodic weekly evaluation of daily work.
Quantifiable? (Reduced personal influence or judgment)	No	Due to confusion between the threshold and surveillance. Required personal judgment of what is desired.
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
64	Perform maintenance and repair work to a level commensurate with established SOW timelines	92% of the time, measured on a weekly interval.	Periodic monitoring of 10% of the daily work accomplished, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each work order will have its industry standard or manufacturers data according to the facility
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Periodic monitoring 10% of the daily work accomplished is not specific. The confusion is whether the work accomplished daily is evaluated periodically throughout the day, or whether there is periodic weekly evaluation of daily work.
Quantifiable? (Reduced personal influence or judgment)	No	Due to confusion between the threshold and surveillance. Required personal judgment of what is desired.
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
66	DSW Completion: Complete DSW's IAW AFI 32-1004v3 time frame.	Properly executed 90% of the time, on a weekly basis.	Daily monitoring of DSW accomplishments, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Proper completion of Direct Scheduled Work
Sensor?	Yes	Records are maintained
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Properly executed within the time frames 90% of the time
Quantifiable? (Reduced personal influence or judgment)	No	Personal influence and judgment will affect the definition of properly executed. The objective may need to include within acceptable industry standards to reduce the personal judgment and influence.
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
67	DSW Completion: Complete DSW's IAW AFI 32-1004v3 time frame.	Timely resolution 90% of the time, on a weekly basis.	Daily monitoring of DSW accomplishments, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time to complete Direct Scheduled Work
Sensor?	Yes	Records are maintained
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Timely resolution 90% of the time
Quantifiable? (Reduced personal influence or judgment)	Yes	Times are established within the AFI
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
73	Maintain base real property, accountable real property installed equipment (RPIE), and civil engineering responsibility non-RPIE items (e.g. dorm furniture, microwaves, appliances, etc.).	100% of taskings shall meet established suspenses with no more than 5% requiring correction.	Review monthly metric(s) and customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each base real property, RPIE, and civil engineering responsibility non-RPIE items
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The threshold does not coincide with the objective
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
74	Infrastructure Provide: operations, maintenance (including recurring maintenance), repair, alteration, and management services for all facilities, systems, pavements, fences, signs, culverts, ditches, landscaping (excluding work performed by contractor), grounds and utilities; infrastructure management; energy conservation and cost reduction program, and building demolition.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Each item identified as real property of infrastructure
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	All operation, maintenance, and repair cannot affect the departure of alert aircraft
Quantifiable? (Reduced personal influence or judgment)	Yes	Discrepancies preventing alert aircraft from departing are recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects completion of mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
75	Manage workload within budgetary constraints and in keeping with engineering life cycle cost rationale.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Financial
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	The threshold does not agree with the objective
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
77	On-site response to urgent work orders within 1 workday	95% of the time and within 2 work days 100% of the time. If required materials are not on-hand, order required materials within 7 calendar days, 100% of the time. Mitigate condition to routine status or better within 7 calendar days after required materials are available 100% of the time.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Response time to urgent work orders
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Measures the time to respond to an urgent work order
Quantifiable? (Reduced personal influence or judgment)	Yes	Response times are recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
78	Complete routine work orders within 30 days of notification or receipt of material. Material requirements must be processed within 14 calendar days of receipt 100% of the time.	95% of the time	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Completion of routine work orders
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Measures the time to complete a routine work order
Quantifiable? (Reduced personal influence or judgment)	Yes	Completion times are recorded
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
87	Elevators and all other personnel/property lifts including cranes and hoists meet all requirements outlined in ANSI/ASME Safety Codes.	Maintenance and repair services must conform to all applicable standards and codes 100% of the time.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Elevators and hoists
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Each crane and hoist must meet safety codes
Quantifiable? (Reduced personal influence or judgment)	Yes	Safety codes reduce personal judgment and influence
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affect mission capability

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
89	All services and functions provided to all facilities, systems, equipment and utilities shall be ready to the user	100% of the time.	Customer complaint.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All services and functions
Sensor?	Yes	Records are maintained
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	All services and functions provided to facilities…shall be ready to the user is a confusing statement
Quantifiable? (Reduced personal influence or judgment)	No	Due to confusing objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
94	Preventive Maintenance. Develop and utilize a preventive maintenance (PM) or recurring work program (RWP) to minimize repair, and replacement cost, interruption of service, enhance system reliability, and extend the life cycle of RPIE.	90 % of scheduled preventive maintenance is accomplished during the scheduled maintenance period. Remaining PM shall be carried forward to the next month and completed then.	Customer complaint and records review.	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Financial, downtime, and quality
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Mismatch between objective and threshold. Threshold establishes number of PM accomplished; not cost or downtime or quality.
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch between objective and threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
109	The contractor shall comply with all Equipment Maintenance requirements IAW the standards identified in PWS.	Lot Size =23 Estimated number of repairs per month PR = 2 (3)	Periodic Surveillance	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All maintenance requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All equipment maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
110	The contractor shall comply with all Pavements requirements IAW the standards identified in PWS.	Lot Size = 75 Estimated scheduled and unscheduled tasks per month Sample Size 26 PR = 2 (3) IQL 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All pavement requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All pavements requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
111	The contractor shall comply with all Equipment Support requirements IAW the standards identified in PWS.	Lot Size = 75 Estimated scheduled and unscheduled tasks per month Sample Size 26 PR = 2 (3) IQL 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All equipment support requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All equipment support requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
113	The contractor shall comply with all Fencing and Gates requirements IAW the standards identified in PWS.	Lot Size =19 Estimated Work Orders per month PR = 2 (3)	Periodic Surveillance	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All fencing and gate requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All fencing and gate requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission (installation security)

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
115	The contractor shall comply with all Equipment Maintenance requirements IAW the standards identified in PWS.	Lot Size =50 Estimated number of repairs per month PR = 2 (3)	Periodic Surveillance	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All Equipment Maintenance requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All equipment maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
134	The contractor shall comply with all Preventive Maintenance requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All Preventive Maintenance requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All preventive maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
137	The contractor shall comply with all Satellite Plants Operations requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size =32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All Satellite Plants Operations requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All satellite plants operations requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
138	The contractor shall comply with all Satellite Plants Maintenance requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	All Satellite Plants Maintenance requirements
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All satellite plants maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
152	Provide a trend analysis for the total maintenance cost based on maintained facility square footage (i.e., dollars per total building area, $/SF). Individual metrics should be developed for (1) labor, (2) material, and (3) total cost for maintenance and repair divided by the total maintained building square footage. Maintenance cost is the cost incurred by the service provider for performing maintenance and repair work. The area of buildings shall be for total maintained building square footage.		Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Total maintenance cost per facility
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Identifies exactly what is needed
Quantifiable? (Reduced personal influence or judgment)	Yes	Costs are identified from records and divided by total building SF
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and impacts mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
155	Urgent DSW requirements must be completed within 7 calendar days	98% of all urgent DSW	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	The defined measure of unit is time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly records review
Understandable? (Not difficult to understand)	Yes	Review of records to determine time to complete urgent Direct Scheduled Work requests.
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon time entered into records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
156	All routine DSW requirements must be completed within 30 calendar days	95% of all routine DSW	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	The defined measure of unit is time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly records review
Understandable? (Not difficult to understand)	Yes	Review of records to determine time to complete routine Direct Scheduled Work requests.
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon time entered into records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
157	All measured work orders (or planned work orders) must be completed by the estimated commitment date.	85% of all measured work orders (or planned work orders)	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	The defined measure of unit is time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly records review
Understandable? (Not difficult to understand)	Yes	Review of records to determine time to complete all measured work orders
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon time entered into records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

Appendix E. 1.2 Operations Flight Functions

Appendix E contains each of the lines classified as 1.2, Provides trained personnel and technical expertise to support operations worldwide, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line. .

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
1	Provide Production Control that is Professional and Courteous at all times.	0 Defects. Lot is number of calls received or verbal requests taken monthly.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Customer Satisfaction

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Professional and courteous personnel
Sensor?	Yes	Customer records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Professional and courteous personnel
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment is not reduced. Professionalism and courtesy are subjective to customers' perception
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
2	Provide Production Control that properly classifies work IAW SOW.	1 Defect. Lot is number of work orders processed through service calls or verbal requests taken monthly	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Work properly classified
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment affects the decision of properly classified work
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
3	Provide Production Control having an average turn around time, date of request to date of receipt by customer of work order approval/non-approval, 2 weeks or less	1 Defect. Lot is number of written work requests received in a month.	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Decision time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reviews the time to make an approval or non-approval
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of work requests
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
4	The proper classification of work	1 Defect. Lot is number of written work requests received in a month.	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work requests
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reviews work that may have been improperly classified
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment influences classification
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
8	Service calls received and documented IAW requirements of PWS.	1 DEFECT ALLOWED. Lot is # of service calls received during the month	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Service calls
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reviews call log and ensures calls are documented
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon call log
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is administrative and should have no affect on quality of life, mission, or the customer

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
18	A responsible member will attend all meetings of base activities involving Civil Engineering Ops interests where Ops is the OPR.	1 missed meeting. Lot is the number of scheduled meetings during the month requiring Civil Engineering Operations personnel.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of meetings that involve Civil Engineering Ops
Sensor?	Yes	Meeting minutes
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Representation must be made at meetings
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment influences the choice of a “responsible” member and the objective is open to debate if the meetings are not clearly listed
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
19	Meeting Attendance: Ensure contractor representation at all meetings IAW SOW.	90% of the time, measured in monthly intervals.	Weekly periodic reviews of contractor records and reports	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of meetings
Sensor?	Yes	Meeting minutes
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Representation must be made at meetings
Quantifiable? (Reduced personal influence or judgment)	Yes	Personal judgment influences is reduced because the SOW lists the meetings that a representative must attend
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
20	Provide agendas two work days in advance to meeting attendees and develop any visual aids necessary to conduct the meeting	1 missed meeting. Lot is the number of scheduled meetings during the month requiring Civil Engineering Operations personnel.	Customer Complaint	1.2, Provides trained personnel and technical expertise to support operations worldwide	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Meeting minutes
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Agendas two days in advance
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon missing agendas at meetings
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objecti ve	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
29	Provide work plans to ensure ordering of proper materials and craftsmen have proper details to complete the job within 10% of estimates	0 Defects. Lot is number of work orders comp leted monthly.	Checklist	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Ensure work plans are of high quality and do not underestimate costs of jobs
Quantifiable? (Reduced personal influence or judgment)	No	The estimate may have been inaccurate versus work plans not being accurate
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
37	All required reports and schedules are provided on time	1 DEFECT ALLOWED. Lot is total # of reports and schedules required each month.	100% Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reports and schedules must meet timelines
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of reports not meeting the timelines
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
38	All reports and schedules are provided in the form/format prescribed in PWS	1 DEFECT ALLOWED. Lot is total # of reports and schedules required each month.	100% Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Correct form/format
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reports and schedules must be submitted in p roper form/format
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of reports not submitted in proper form/format
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
39	Maintenance folder shall be maintained for each facility. All work/inspections accomplished on the facility shall be documented in the folder	0 DEFECTS ALLOWED. Lot is total # of facility files to be maintained by the contractor.	Monthly Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Folders
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Maintenance folders must be maintained
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of facilities not having maintenance folders
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
40	Real Estate Management: Records are maintained to account for all Air Force Real Property.	95% of the time, measured on a monthly interval.	Periodic review of 25% of the documentation	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Folders
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Facility records must be maintained
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of facilities not having records
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
41	Records are entered into the Real Property database within 30 days after receipt of the final and complete transaction document.	95% of the time, measured on a monthly interval.	Periodic review of 25% of the documentation	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The surveillance does not need the periodic review of 25% of the documentation. It is either entered into the system or not. May cause confusion
Quantifiable? (Reduced personal influence or judgment)	No	Bases upon surveillance aspect
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
68	Work Order Execution: Complete approved work orders (between 50 to 250 man-hours) within 10% of approved cost.	Properly executed 95% of the time, measured on a monthly interval.	Periodic monitoring of 20-40% of approved work orders, customer complaints	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work order
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The threshold states “properly executed”. There needs to be some standards referenced.
Quantifiable? (Reduced personal influence or judgment)	No	Due to the threshold not referencing any standards
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
69	Work Order Execution: Complete approved work orders (between 50 to 250 man-hours) within 10% of approved cost.	Timely resolution 95% of the time, measured on a monthly interval.	Periodic monitoring of 20-40% of approved work orders, customer complaints	1.2, Provides trained personnel and technical expertise to support operations worldwide	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records are maintained
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	There is a mismatch between the Objective (cost) and the threshold (time)
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
79	Process work requests that have been prioritized and approved by designated government official.	Valid customer complaints shall not exceed 5% of total work orders accomplished.	Review monthly metrics and records.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work requests
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The threshold is not understandable. Is the complaint cost, quality, or time?
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of valid complaints on completed work requests in a month
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
80	Determine scope, method, type of resources, and estimate the quantity of resources needed.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work estimates
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	The objective and the threshold do not coincide with one another
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
81	Install equipment and systems to meet all manufacturer installation specifications.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint. Review records for results and ensure results are reported within stated expectation.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Installed equipments
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	The objective and the threshold do not coincide with one another
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mis sion, or Customer)	Yes	Affects customers, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
83	Identify, update, and maintain in the Civil Engineer Material Acquisition System (CEMAS), or any successor system, all material and service purchases required to perform workload.	No facility/infrastructure related discrepancy shall prevent Alert aircraft ability to depart with 15 minute notice.	Customer complaint.	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Data inputs
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	The objective and the threshold do not coincide with one another
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
96	The contractor shall comply with all Work/Request Order Management requirements IAW the standards identified in the PWS	Lot Size =2636 Estimated Work Orders per month Sample Size = 27 PR =2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Specified work order requirements will be complied with
Quantifiable? (Reduced personal influence or judgment)	Yes	Requirements are listed in PWS to reduce personal influence
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
97	The contractor shall comply with all In-Service Work Management requirements IAW the standards identified in PWS.	Lot Size = 22 Estimated work days per month PR = 2 (3) PR	Periodic Surveillance	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work days
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	All in-service work management requirements are complied with
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of days that in-service work management requirements were not complied with
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
98	The contractor shall comply with all RWP requirements IAW the standards identified in PWS.	Lot Size = 500 Scheduled tasks per month Sample Size = 27 PR =2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Scheduled tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All RWP requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
121	The contractor shall comply with all Carpentry requirements IAW the standards identified in PWS.	Lot Size = 330 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All Carpentry requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
122	The contractor shall comply with all Masonry requirements IAW the standards identified in PWS.	Lot Size = 150 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All masonry requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
123	The contractor shall comply with all Painting requirements IAW the standards identified in PWS.	Lot Size = 115 Estimated Work Orders per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All painting requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Does not significantly impact customers, quality of life, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
124	The contractor shall comply with all Locks requirements IAW the standards identified in PWS.	Lot Size = 269 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All lock requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Does not significantly impact customers, quality of life, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
126	The contractor shall comply with all Metals requirements IAW the standards identified in PWS.	Lot Size = 72 Estimated Work Orders per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All metal requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
127	The contractor shall comply with all Asbestos Abatement requirements IAW the standards identified in PWS.	Lot Size =27 Estimated Work Orders per month PR = 1 (2)	100% Inspection	1.2, Provides trained personnel and technical expertise to support operations worldwide	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Asbestos abatement requirements identified in the PWS must be complied with, but cannot be evaluated simply by the work order
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering and quality of life (safety)

Appendix F. 1.3 Operations Flight Functions

Appendix F contains each of the lines classified as 1.3, Maintain capability to respond to and eliminate any emergency condition 24 hours a day, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
5	Emergency Work Requests: 30 minutes (duty hours)/1 hour (non-duty hours); completed (safed) in 24 hours.	100% of the time	Records Review or Customer Contact, at least 1/week	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Ensure emergency work requests are responded to and completed
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of emergency work requests
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
65	Direct Scheduled Work (DSW) Response: Respond on scene to emergency DSW's within one (1) hour during normal duty hours and two (2) hours during all other hours.	95 % of the time, measured on a weekly basis.	100% monitoring of emergency response times. Customer complaints	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Ensure emergency work requests are responded to
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of emergency work requests
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
76	On-site response to emergency work orders	Within 30 minutes, 100% of the time (except AFWA and STRATCOM). Mitigate condition to Urgent or better within 24 hours of original notification 100% of the time.	Customer complaint.	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Ensure emergency work requests are responded to
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of emergency work requests
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
154	All emergency direct scheduled work (DSW) requirements must be completed within 24 hours of notification	98% of all emergency DSW	Monthly	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Ensure emergency work requests are completed
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of emergency work requests
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
161	Mitigate emergency work requests within 24 hours and complete within 10 calendar days	100% of the time	Monitor customer complaints from ACC.	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	Yes	Ensure emergency work requests are completed
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of emergency work requests
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

Appendix G. 1.4 Operations Flight Functions

Appendix G contains each of the lines classified as 1.4, Conducts all activities in compliance with applicable safety laws, codes, and directives, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
17	Material Safety Data Sheets (MSDS). Upon receipt of material, the contractor shall establish and maintain the required MSDS for materials and forward to the appropriate section.	MSDS's are available for all material within 15 working days of receipt.	Periodic review of contractor records	1.4, Conducts all activities in compliance with applicable safety laws, codes, and directives	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	MSDS
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	MSDS must be available to personnel
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the types of hazardous material in storage
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that does not have a significant impact on mission, quality of life, or customers

Appendix H. 1.5 Operations Flight Functions

Appendix H contains each of the lines classified as 1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
10	Operate, maintain, and repair Power Conditioning and Continuation Interface Equipment (PCCIE). *(*mission critical item)*	System mission impacting utility failure will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable? (Reduced personal influence or judgment)	No	Because the objective safe start up cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
11	Operate, maintain, repair, installation, safe start-up control, and shutdown of power distribution system, and mechanical systems, ancillary systems, and power distribution systems. (*mission critical item)	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable? (Reduced personal influence or judgment)	No	Because the objective safe start up cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
12	Operate, maintain, control and monitor utility systems and system alarms. *(*mission critical item)*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable?(Reduced personal influence or judgment)	No	Because the objective safe start up cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
13	Operate, maintain, test, and repair water supply and distribution systems, telemetry, storage, pumping, valves, controls, filters, treatment, and related installed and standby equipment.	94% of all inspection and operation tests will be completed on time. The remaining 6% will be completed within 5 working days of scheduled date.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable? (Reduced personal influence or judgment)	No	Because the objective of testing cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
14	Operate, maintain, and repair water supply and distribution systems, storage, pumping, valves, controls, filters treatment, and related installed and standby equipment. *(*mission critical item)*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable? (Reduced personal influence or judgment)	No	Because the objective safe start up cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
15	Operate, maintain, and repair mechanical systems to ensure temperatures/ humidity to the mission critical centers are within mission equipment parameters. *(*mission critical item*	System mission impacting failure time will not exceed 5.3 minutes (99.999%) annually.	Monthly periodic review of operations and repair actions (RWP records, consumption of parts relative to RWP reports, and outage reports)	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to the objective being too broad
Quantifiable?(Reduced personal influence or judgment)	No	Because the objective of ensuring humidity/temp parameters cannot be evaluated by time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
47	Perform all generator maintenance recommended by the manufacturer; perform inspections, tests and maintenance IAW PWS	0 DEFECTS ALLOWED. Lot is # of generators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of generators
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Generator maintenance to be performed to manufacturers' specifications
Quantifiable? (Reduced personal influence or judgment)	Yes	Number of generators not maintained to specifications
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
48	Components of water distribution system shall be inspected, tested/maintained IAW PWS	2 DEFECTS ALLOWED. Lot is total # of individual components of water distribution system to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of water distribution components
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Components inspected IAW PWS
Quantifiable? (Reduced personal influence or judgment)	Yes	Inspection and maintenance procedures are specified in the PWS; reduces personal judgment.
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
49	Lift Stations shall be inspected and maintained IAW PWS	0 DEFECTS ALLOWED. Lot is number of lift stations	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of lift stations
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Components inspected IAW PWS
Quantifiable? (Reduced personal influence or judgment)	Yes	Inspection and maintenance procedures are specified in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
50	All gate valves, pressure relief valves, and regulators are inspected on time.	0 DEFECTS ALLOWED. Lot is total # of gate valves, pressure relief valves and regulators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Components inspected IAW PWS
Quantifiable? (Reduced personal influence or judgment)	Yes	Inspection and maintenance times are specified in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
51	All gate valves, pressure relief valves, and regulators are kept mechanically operable	0 DEFECTS ALLOWED. Lot is total # of gate valves, pressure relief valves and regulators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of valves and regulators
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Components inspected IAW PWS
Quantifiable? (Reduced personal influence or judgment)	Yes	Inspection and maintenance procedures are specified in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
52	All gate valve, pressure relief valve, and regulator log entries are complete, accurate and up to date.	0 DEFECTS ALLOWED. Lot is total # of gate valves, pressure relief valves and regulators to be maintained.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of valve and regulator logs
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Log entries must be complete and accurate
Quantifiable? (Reduced personal influence or judgment)	Yes	Number of logs not accurately updated
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
53	Boilers shall be operated 24 hours per day, seven days per week during heating season.	2 DEFECTS ALLOWED. Lot is total # of boilers.	Customer Complaints	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of boilers
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Boilers must be run 24/7
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of boilers not operating
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
54	Boilers shall be maintained IAW PWS	2 DEFECTS ALLOWED. Lot is total # of boilers.	Customer Complaints	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of boilers
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Components maintained IAW PWS
Quantifiable? (Reduced personal influence or judgment)	Yes	Inspection and maintenance procedures are specified in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
55	All permanent filters are cleaned and all throw-away filters are replaced quarterly IAW PWS	2 DEFECTS ALLOWED. Lot is total # of filters.	Periodic Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of filters
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	filters inspected and cleaned IAW PWS
Quantifiable? (Reduced personal influence or judgment)	Yes	Inspection and maintenance procedures are specified in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
56	Storage tanks, valves, appurtenances, and piping are inspected and maintained IAW PWS. Tanks/piping are free of leaks & corrosion, and all components are operating properly.	0 DEFECTS ALLOWED. Lot is total # of storage tanks.	Monthly Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of storage tanks and associated equipment
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Storage tanks and associated equipment are leak and corrosion free
Quantifiable? (Reduced personal influence or judgment)	No	The amount of leaks & corrosion is not quantifiable, it is subjective to evaluator
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
88	Utilize NFPA guidance to perform hydrant flow testing for approximately 211 fire hydrants in the Capehart housing area (60 of these flow tested annually) and 192 fire hydrants on the main base property (75 of these flow tested annually).	Records updated and filed within 10 workdays after completion of tests 100% of the time.	Customer complaint. Records review to ensure results are reported and within stated expectations.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Records of hydrant flow testing must be filed within 10 days of the testing
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of tests completed
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission capability and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
90	Scheduled utility outages coordinated with users.	100% of the time	Customer complaint and records review.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Customer Satisfaction

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of utility outages
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Utility outages must be coordinated with user
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of recorded utility outages
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
91	Reduce annual base-wide energy consumption	Reduce by an average of 2% per year to the federally mandated reduction of 35% from calendar year 1985 baseline by calendar year 2010	Review energy consumption metrics to determine if trends will meet reduction goals.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Energy consumption
Sensor?	Yes	Records
Frequency?	Yes	Annually
Understandable? (Not difficult to understand)	Yes	Reduction in energy consumption
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the records of energy consumption
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
92	Defense Utility Energy Report System (DUERS) reports sent to higher headquarters monthly on time.	100% of the time	Monitor customer complaints from ACC.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reports sent to higher headquarters on time
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon arrival of reports on time
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
93	Defense Utility Energy Report System (DUERS) reports properly documented	Less than 5% returned due to errors.	Monitor customer complaints from ACC.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Documents
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Reports sent to higher headquarters are properly documented
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon documentation of reports
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
99	The contractor shall comply with all Energy Management Systems requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size = 32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Shifts per month
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All energy management systems requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
100	The contractor shall comply with all Industrial Electric requirements IAW the standards identified in PWS.	Lot Size = 266 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All industrial electric requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
101	The contractor shall comply with all Generators requirements IAW the standards identified in PWS.	Lot Size = 25 Estimated Scheduled and unscheduled tasks PR = 2 (3)	Periodic Surveillance	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All generator requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
112	The contractor shall comply with all Drainage Systems requirements IAW the standards identified in PWS.	Lot Size =26 Estimated scheduled and unscheduled tasks per month PR = 2 (3)	100% Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All drainage requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
118	The contractor shall comply with all Airfield Lighting Systems requirements IAW the standards identified in PWS.	Lot Size = 31 Estimated number of scheduled and unscheduled tasks per month PR = 0 (1)	100% Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All airfield lighting requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
119	The contractor shall comply with all Interior Electric requirements IAW the standards identified in PWS.	Lot Size = 385 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All interior electric requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
120	The contractor shall comply with all Plumbing requirements IAW the standards identified in PWS.	Lot Size = 463 Estimated Work Orders per month. Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All plumbing requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
125	The contractor shall comply with all HVAC requirements IAW the standards identified in PWS.	Lot Size = 138 Estimated Work Orders per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All HVAC requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
130	The contractor shall comply with all Exterior Electric requirements IAW the standards identified in PWS.	Lot Size = 150 Estimated number of scheduled and unscheduled tasks per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All exterior electric requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
131	The contractor shall comply with all Water Treatment requirements IAW the standards identified in PWS.	Lot Size =54 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All water treatment requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
132	The contractor shall comply with all Water Distribution requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of scheduled and unscheduled tasks per month Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All water distribution requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
133	The contractor shall comply with all Gas Distribution requirements IAW the standards identified in PWS.	Lot Size = 6 Estimated number of occurrences per month PR = 2 (3)	100% Inspection	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All gas distribution requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
135	The contractor shall comply with all Heating Plants Operations requirements IAW the standards identified in PWS.	Lot Size =90 Shifts per Month Sample Size = 32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Shifts per month
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All heating plants operations requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
139	The contractor shall comply with all Heating Distribution requirements IAW the standards identified in PWS.	Lot Size =100 Estimated scheduled and unscheduled tasks per month Sample Size =32 PR = 1 (2) IQL = 5% (10%)	Random Sampling	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All heating distribution requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
150	Measure/track the overall cost of utilities per square foot of buildings. This is accomplished by dividing the total cost of a utility by the gross square footage of facilit ies on the entire base. Example: We spent $5,958,108 on electricity in FY98 and had a gross square footage (of buildings) of 7,434,170. $5,958,108/7,434,170 results in $0.80144/sf for electricity. The metric will have three columns; one for electricity, one for gas, and one for water.	The goal is to show a decline in total energy costs per square foot.	Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost per Square Foot
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	All utility costs associated with a building
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the cost of utilities for a building
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
151	Measure the total annual British Thermal Unit (BTU) consumption per gross square foot compared to the 1985 baseline. The metric will be tracked and presented on a monthly basis to identify trends and get a prediction for meeting the annual reduction goal. Water is the exception. Water is reported in Millions of Gallons per gross square foot (Mgal/sf) reduction. The metric will have three columns for each month; one for electricity, one for natural gas, and one for water.	FY 1985 is the baseline chosen by the United States Congress.	Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	BTU consumption per gross square foot and millions of gallons
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Gas and water consumption associated with a building
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the amount of gas and water for a building
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
158	Measure the number of unscheduled outages of all critical systems. Critical systems include electrical distribution, runway lighting, water, natural gas, HVAC (heating, ventilating, & air conditioning), steam, and chill water systems. An outage can be defined as any interruption to the particular service or system that was not the result of a coordinated/planned outage for system repairs or upgrades. Outages shall be tracked by facility and systems.		Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Unscheduled outages
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Based upon the number of unscheduled outaages
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon number of unscheduled outages
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

Appendix I. 1.6 Operations Flight Functions

Appendix I contains each of the lines classified as 1.6, Provides base support services, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
43	Improved grounds maintained at those frequencies listed in PWS.	1 DEFECT ALLOWED. Lot is total area of improved grounds.	Customer Complaint	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Total area of improved grounds
Sensor?	Yes	Records
Frequency?	Yes	Established in PWS
Understandable? (Not difficult to understand)	No	The threshold and the objective are mismatched; frequencies cannot be evaluated by a total area of improved grounds
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch of the threshold and the objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
44	Semi - improved grounds maintained at those frequencies listed in PWS	1 DEFECT ALLOWED. Lot is total area of semi-improved grounds.	Customer Complaint	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Total area of semi-improved grounds
Sensor?	Yes	Records
Frequency?	Yes	Established in PWS
Understandable? (Not difficult to understand)	No	The threshold and the objective are mismatched; frequencies cannot be evaluated by a total area of semi-improved grounds
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch of the threshold and the objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
45	Inspect and Service Buildings and Sites for insect/rodent infestation. Buildings and sites inspected and serviced per Schedule.	1 DEFECT ALLOWED. Lot is # of buildings or sites required to be inspected/serviced during the month.	100% Inspection	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Buildings or sites to be inspected
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Ensure buildings and sites are inspected
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the actual number of building and sites inspected divided by the number of buildings and sites scheduled to be inspected
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
46	Carcasses are disposed of on time.	0 DEFECTS. Lot is # of carcasses removed per month.	100% Inspection	1.6, Provides base support services	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of carcasses
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	There are no time requirements listed
Quantifiable? (Reduced personal influence or judgment)	Yes	Number of carcasses not removed on time
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Does not impact mission, quality of life, or customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
57	All debris and dust are swept from airfield pavements at frequency specified in PWS.	0 DEFECTS ALLOWED. Lot is # of times airfield pavements are swept per month.	Weekly Inspection	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of times airfield is swept
Sensor?	Yes	Recorded complaints
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	No	The objective, threshold and surveillance do not coincide with one another. There is a frequency specified in the PWS, then a monthly lot number, and finally a weekly inspection.
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment affects the evaluation of the sweeping
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
70	Grounds Maintenance: Maintain base grounds IAW industry standards and SOW requirements.	No more than 5% deviation from approved schedule without FD approval, measured on a monthly interval.	Continually evaluation of VIP routes, periodic inspections of non-VIP routes, customer complaints	1.6, Provides base support services	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no defined unit of measure
Sensor?	Yes	Recorded complaints
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	There is a mismatch between the objective and the threshold. The Objective is quality based and the threshold is time based.
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
71	Refuse Collection: Collect and dispose of waste (After contractor assumption of tasks Oct 2001). Refuse is picked up and disposed of IAW with SOW standards and schedules.	Properly executed. Pick up schedule deviation is less than 5%, measured on a monthly basis.	Periodic evaluation for cleanliness of at least 10% of the affected areas. Customer complaints	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no defined unit of measure
Sensor?	Yes	Recorded complaints
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	There is a mismatch between the objective, threshold and the surveillance. It is not understandable how to evaluate someone on proper execution of refuse collection.
Quantifiable? (Reduced personal influence or judgment)	No	Cannot quantify the proper execution
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
72	Refuse Collection: Collect and dispose of waste (After contractor assumption of tasks Oct 2001). Refuse is picked up and disposed of IAW with SOW standards and schedules.	Completed on time. Pick up schedule deviation is less than 5%, measured on a monthly basis.	Customer complaints	1.6, Provides base support services	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Recorded complaints
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Refuse must be completed on time
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon recorded schedules of refuse collectors
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
82	Airfield and base pavements remain capable of supporting Emergency War Order aircraft launches during and after snowfalls/ice accumulation	100% of the time.	Customer complaint.	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Recorded complaints
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Alert aircraft must be able to depart during snow/ice accumulation
Quantifiable? (Reduced personal influence or judgment)	Yes	Airfields and all roads supporting alert crews must be kept clean of snow and ice
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
84	Pest Control Services: Develop and comply with the IPM Plan, approved by the government. Plan developed, submitted, and approved on time.		Review Quarterly Metrics	1.6, Provides base support services	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Quarterly
Understandable? (Not difficult to understand)	No	It is not clear what the measurable aspect of the objective should be
Quantifiable? (Reduced personal influence or judgment)	No	Due to the lack of threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not affect customers, mission, or quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
85	Record daily pesticide usage and report usage quarterly to ACC.		Review Quarterly Metrics	1.6, Provides base support services	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Daily pesticide usage
Sensor?	Yes	Records
Frequency?	Yes	Quarterly
Understandable? (Not difficult to understand)	Yes	Track the daily usage of pesticide
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon records revealing the amounts used
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, mission, or customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
86	Record daily pesticide usage and report usage quarterly to ACC.	Reduce yearly pesticide consumption 50% in compliance with 1993 DOD baseline study.	Review Quarterly Metrics	1.6, Provides base support services	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Daily pesticide usage
Sensor?	Yes	Records
Frequency?	Yes	Quarterly
Understandable? (Not difficult to understand)	Yes	Track the annual usage of pesticide
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon records revealing the amounts used; attempt to reduce usage
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
104	The contractor shall comply with all Airfield Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 22 Estimated days per month PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work days
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All airfield ground maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
105	The contractor shall comply with all Improved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 141 Areas identified on the contractors schedule Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of improved ground areas
Sensor?	Yes	Records
Frequency?	Yes	Established by PWS
Understandable? (Not difficult to understand)	No	All improved grounds maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
106	The contractor shall comply with all Enhanced Improved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 57 Areas identified on the contractors schedule Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of enhanced improved ground areas
Sensor?	Yes	Records
Frequency?	Yes	Established by PWS
Understandable? (Not difficult to understand)	No	All enhanced improved grounds maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
107	The contractor shall comply with all Semi Improved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 28 Areas identified on the contractors schedule PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of semi-improved ground areas
Sensor?	Yes	Records
Frequency?	Yes	Established by PWS
Understandable? (Not difficult to understand)	No	All semi improved grounds maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
108	The contractor shall comply with all Unimproved Grounds Maintenance requirements IAW the standards identified in PWS.	Lot Size = 38 Areas identified on the contractors schedule PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of unimproved ground areas
Sensor?	Yes	Records
Frequency?	Yes	Established by PWS
Understandable? (Not difficult to understand)	No	All unimproved grounds maintenance requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
114	The contractor shall comply with all Sweeping requirements IAW the standards identified in PWS.	Lot Size = 22 Estimated number of days per month PR = 2 (3)	Periodic Surveillance	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Days
Sensor?	Yes	Recorded complaints
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All sweeping requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
116	The contractor shall comply with all Snow and Ice Control requirements IAW the standards identified in PWS.	Lot Size = 65 Estimated map areas identified during S&IC operations Sample Size = 26 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Areas
Sensor?	Yes	Recorded complaints
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	All snow and ice control requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

Appendix J. 1.7 Operations Flight Functions

Appendix J contains each of the lines classified as 1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
58	Quality Control: Effective Quality Control operation ensuring SOW standards are met. Performance deficiencies are identified and corrected IAW the FD approved Quality Control program. Inspections are conducted as scheduled IAW FAR 52246-4 for guidance.	95% of the time, measured in monthly intervals.	weekly review of at least 10% of the contractors' reports	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no defined unit of measure
Sensor?	Yes	Reports
Frequency?	Yes	Weekly
Understandable? (Not difficult to understand)	No	The surveillance does not support the objective. Ensuring SOW standards are met should not consist of just a review of contractor records.
Quantifiable? (Reduced personal influence or judgment)	No	Due to surveillance discrepancy
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
59	Unit Cost, Revenue, Expenses, and Performance Data: Collect, review, and submit required data IAW established schedule.	95% of the time, measured in monthly intervals.	Periodic review of plans	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no unit of measure
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Surveillance does not coincide with objective. Periodic review of plans will not validate meeting the time requirements of obtaining and submitting financial and performance data.
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch of surveillance and objective
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
60	Infrastructure Condition Index: Compile data and submit to AFMC.	Update and submit by HQ established due date 95% of the time, measured on an annual basis.	Review 50% of submitted documents	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Condition Index
Sensor?	Yes	Records
Frequency?	Yes	Annual
Understandable? (Not difficult to understand)	Yes	Obtain a condition index for the infrastructure
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment affects the condition index
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
95	The contractor shall comply with all Quality Control requirements IAW the standards identified in the PWS	PR 0 (1)	100% Inspection	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no defined unit of measure
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	No	Because there is no unit of measure
Quantifiable? (Reduced personal influence or judgment)	Yes	Quality control requirements are listed in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
140	Measure the unit cost per square foot for all the facilities used by or maintained by the service provider. Costs shall include all direct and indirect costs associated with the Service Provider effort to satisfy the PRD. Costs per square foot will be calculated by dividing the total cost of the services provided by the total square feet. This metric shall not include the costs of utilities.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost per square foot
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain costs per sq. ft. of all facilities used or maintained by the provider
Quantifiable? (Reduced personal influence or judgment)	Yes	The objective clearly defines what is included; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
141	Measure the unit cost per occupant to maintain and operate the facilities used or maintained by the service provider (SP). Costs shall include all direct and indirect costs associated with the SP's effort to satisfy the PRDs. The metric will be calculated by dividing the service provider's total monthly costs by the total number of base occupants including all employees (civilian, military and contractor), all permanent residents of the base and TDY individuals. TDY individuals shall be computed in person-months based upon available person-days of temporary assignments. This metric shall not include the costs of utilities.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost per occupant
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain costs per customer of all facilities used or maintained by the service provider
Quantifiable? (Reduced personal influence or judgment)	Yes	The objective clearly defines what is included; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects quality of life and customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
142	Measure the critical asset downtime. The measurement will include all scheduled and unscheduled downtime. The scheduled and unscheduled downtime will be represented by two separate items on the metric.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the amount of time a critical asset is down
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the amount of downtime found in records; personal judgment is reduced
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
143	Measure the percentage of unscheduled work performed on the installation as a portion of total work performed. Unscheduled work is defined as any work the service provider or the Program Management Office has not foreseen.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Amount of unscheduled work
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain percentage of work that is unscheduled
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon amount of unscheduled work listed in the records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
144	Measure the difference between budgets and actuals. Budget variance is a measurement of the difference between the programmed dollar amount and the actual final dollar amount of the reporting period. The total variance will be calculated for each reporting period. The differences shall be indicated mathematically as a percentage to develop a performance rate of increase or decrease. This information will provide an indicator of the Service Providers efficiency.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the difference between estimates and actual costs
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the cost data found in the records; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
145	Measure the average schedule variance. Schedule variance is a measurement of the difference between scheduled completion dates and actual completion dates. The differences shall be shown in days. This information will provide an indicator of the Service Providers efficiency. This metric shall show the average schedule variance for all the projects in the reporting period.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the difference between estimates and actual time to complete
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the schedule data found in the records; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
146	Report the average cycle time it takes the Service Provider to provide reasonable answers to customers' requests.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the amount of time to respond to customers
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment will affect what is defined as a reasonable answer to the customer
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
147	Measure the number of compliance citations the Service Provider receives.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Compliance citations
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the number of compliance citations
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of citations received
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
148	Measure the number of times the Service Provider was not timely on coordination/input of documents. Timeliness is measured by meeting the requirements of DoD Instruction 4000.19 or AFI 25-201.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the number of times that a suspense was missed
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon records or customer complaints, reduced personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
149	Measure the number of billing disputes reported by reimbursable base customers. Billing disputes are problems reimbursable customers have with how much they are being charged for their utility consumption (water, electricity, gas). Since the cost of a bill is based upon consumption, the Energy Management function must recalculate the consumption in question to verify if the dispute is valid. Valid disputes (i.e., the customer was over charged for their actual utility consumption) will be tracked and reported via this metric.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of valid billing disputes
Sensor?	Yes	Recorded complaints
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the number of valid billing disputes
Quantifiable?(Reduced personal influence or judgment)	Yes	Based upon cost data found in records
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
159	Measure the mean time between failures of facility components, systems, and real property installed equipment (RPIE). The metric will serve as an indicator of facility components, systems, and RPIE that may be reaching their service life or need replacing, overhaul or maintenance action. Facility components, systems, and RPIE include roofs, HVAC, HVAC controls, plumbing, electrical systems, elevators, fire alarms, and fire suppression systems. RPIE is equipment that is permanently attached and is not considered unique to the occupants use of the facility. The service provider will use an industrial engineering analysis to determine the criticality associated with the time duration between each system's failure (i.e., 1-month between failures of a building's HVAC system may be a strong indicator of the need to replace the system; where 1-year between failures of a building's fire alarm may be necessary before any action is taken).		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the time between failures of facility systems and components
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the time between failures found in maintenance records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
160	The service provider will be expected to maintain a professional appearance of all sites, roads, airfield pavements, parking areas, etc. Any deviation from this professional level of service (e.g., complaints of pot holes, low areas holding water on the flightline, spalls on the airfield, accumulation of debris on streets/pavements, higher counts than threshold limits for mosquito population, etc.) will be counted as a data point in this metric. An incident is the first time that an event is brought to the attention of the service provider. A complaint is dissatisfaction with the fix or a lack of response to the incident. This metric will have two columns; one for an incident and one for complaints.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	No	There is no specified unit of measure
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Due to lack of specified unit of measure
Quantifiable? (Reduced personal influence or judgment)	No	Professional appearance cannot be quantified
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Has significant impact upon the customers of the civil engineering, quality of life, and successful completion of the mission

Appendix K. 1.8 Operations Flight Functions

Appendix K contains each of the lines classified as 1.8, Establishes a system to provide customers the capability to accomplish work requirements using their own resources, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
28	Establish, maintain and operate a Self Help store	2 Defects. Lot is the number of customers serviced monthly.	Customer Complaint	1.8, Establishes a system to provide customers the capability to accomplish work requirements using their own resources	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of customers
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The objective does not coincide with the threshold. The objectives needs to be clarified to match the information sought after by the threshold
Quantifiable? (Reduced personal influence or judgment)	No	Due to the mismatch between the objective and the threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
129	The contractor shall comply with all Self - Help requirements IAW the standards identified in PWS.	Lot Size = 126 Estimated Work Orders tracked to Self - Help per month PR = 2 (3)	Periodic Surveillance	1.8, Establishes a system to provide customers the capability to accomplish work requirements using their own resources	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of Self-Help work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	All slef-help requirements is too broad of an area to evaluate by this one metric
Quantifiable? (Reduced personal influence or judgment)	No	Because the area is too broad
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers

Appendix L. 1.10 Operations Flight Functions

Appendix L contains each of the lines classified as 1.10, Effectively allocates in-service resources to meet mission and customers' needs, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
21	Ensure sufficient number of 2-way radio batteries are adequately charged to keep all CE radios operational at all times	0 Defects Lot is number of radios in CE during the month.	Checklist	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of batteries
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Ensures batteries are adequately charged
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of radios not used due to insufficient batteries
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
22	Manage and properly care for all assigned vehicles IAW AFM 77-310.	1 Defect. Lot is number of Civil Engineering vehicles listed in Government Furnished Equipment, Vehicles and Facilities	Customer Complaint	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of vehicles
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Ensures vehicles are adequately maintained
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of vehicles inoperable during a month
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
117	The contractor shall comply with all Snow Removal Readiness requirements IAW the standards identified in PWS.	Lot Size = 50 Estimated number of snow equipment. Occurs once annually PR = 1 (2)	100% Inspection	1.6, Provides base support services1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Snow equipment
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Snow removal equipment must be maintained
Quantifiable? (Reduced personal influence or judgment)	Yes	Requirements and standards are listed in the PWS; reduces personal judgment
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
153	Measure the effective utilization of manpower. Scheduled work (opposed to indirect or unscheduled work) is the number of man-hours planned and scheduled to accomplish repair and maintenance work associated with preventive maintenance, Direct Schedule Work (DSW), planned Work Orders, and operations.	This will be compared to the total number of man-hours available; the closer to 100% the better. The scheduled work % will be presented on a monthly basis to track how well the provider's work plan was implemented. A large percentage of unscheduled work may give the appearance that the service provider is being "reactive" versus "proactive".	Monthly	1.10, Effectively allocates in-service resources to meet mission and customers' needs	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Manpower
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	A large percentage may also appear as an increase in infrastructure breakdown, thus the service provider may have to be reactive.
Quantifiable?(Reduced personal influence or judgment)	No	Personal judgment influences what the percentage represents
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

Appendix M. 1.12 Operations Flight Functions

Appendix M contains each of the lines classified as 1.12, Maintains a time and material accounting system to collect and report the cost of doing business, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
23	Conduct an analysis of all work orders having a 10% or greater difference between planned and estimated hours.	1 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Work order
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Analyze all work orders with a 10% or more variance in actual hours than estimated hours
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the time found in records
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
24	Provide a copy of the variance analysis to the QAE, within one week of receipt of Work Order Variance Report	1 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Work order
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the number of late work order variance reports
Quantifiable? (Reduced personal influence or judgment)	No	Because the reports are due to the QAE, this has high personal influence
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is an administrative issue that should not impact quality of life, customers, or mission

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
25	Provide Material Control Support all CE functions Items are requisitioned and stored IAW AFM 67-1,AFR 85-61 and DODR 4145.19. Average Days to Firm shall not exceed 2 days. Notification of Material Complete Work Orders must be tracked to other than Material Control NLT 2 days.	0 Defects. Lot is number of transactions per month.	Management Information System	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The objective, surveillance, and the threshold are mismatched. The surveillance will not adequately assess the functions listed in the objective; particularly the requisitioned and stored functions.
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch between the surveillance and the objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
26	Provide store stock to insure material is on hand to perform required maintenance	4 Defects. Lot is number of line items in Store Stock.	Random Sampling	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Items in stock
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Obtain the amount of stock required to perform maintenance
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment will influence the amount required to have on hand
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affect customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
27	Provide a specified percentage of total appliances on hand as back-up stock.	0 Defects. Lot is a specified percentage of appliances as stipulated in AETC policy letter	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Appliances in stock
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Obtain the amount of stock required to perform maintenance
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon percentage of appliances as mandated by command
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affect customers

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
128	The contractor shall comply with all Material Acquisition requirements IAW the standards identified in PWS.	Lot Size = 500 Estimated Work Orders tracked to MAT per month Sample Size = 27 PR = 2 (3) IQL = 10% (15%)	Random Sampling	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	The threshold involves work orders. There are many more MAT requirements other than work orders
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch between objective and threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer

Appendix N. 1.13 Operations Flight Functions

Appendix N contains each of the lines classified as 1.13, Provides effective logistics support, from Appendix C. The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
102	The contractor shall comply with all Aircraft Arresting Barriers requirements IAW the standards PWS.	Lot Size = 40 Estimated Scheduled and unscheduled tasks PR = 1 (2)	Periodic Surveillance	1.13, Provides effective logistics support	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Tasks
Sensor?	Yes	Records
Frequency?	No	No established frequency
Understandable? (Not difficult to understand)	Yes	Arresting barrier requirements should be complied with
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of aircraft barrier taskings
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission (safety)

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
103	The contractor shall comply with all Liquid Fuels Maintenance requirements IAW the standards identified in PWS.	Lot Size =33 Estimated Work Orders per month PR = 1 (2)	Periodic Surveillance	1.13, Provides effective logistics support	Operational Service Levels

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	Yes	Records
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	There is a mismatch between the threshold and the objective. There are many more requirements that require monitoring other than work orders.
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch between objective and threshold
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission

Appendix O. Lines That Passed the Primary Evaluation

Appendix O contains all of the lines that passed the primary evaluation, regardless of their Operations Flight Function classification, from Appendix C. The secondary line evaluation table associated with the metric and standard is listed below its respective metric and standard line. The information contained within the secondary evaluation tables is based upon information received from the respective base personnel.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
6	Urgent Work Requests: Completed in 5 days	98.5% of the time	Records Review or Customer Contact, at least 1/week	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Is objective measured?	Yes	Based upon contractor records
Where is collected information stored? (Accessible to those that need information)		Contractor provides records, QAE reviews 10%
How long is the collected information stored?		At least a year
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	
Proven? (Has shown demonstrated results)	Yes	If the work request is not completed in five days, the QAE questions the service provider and initiates closure as close to the five days as possible

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
7	Routine Work Requests: Completed in 30 days	95% of the time	10% Reviewed monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Is objective measured?	Yes	Based upon contractor records
Where is collected information stored? (Accessible to those that need information)		Contractor provides records, QAE reviews 10%
How long is the collected information stored?		At least a year
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	
Proven? (Has shown demonstrated results)	Yes	If the work request is not completed in 30 days, the QAE questions the service provider and initiates closure as close to the 30 days as possible

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
67	DSW Completion: Complete DSW's IAW AFI 32-1004v3 time frame.	Timely resolution 90% of the time, on a weekly basis.	Daily monitoring of DSW accomplishments, customer complaints	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

Criteria	Yes/No	Justification
Is objective measured?	Yes	Routine and Urgent are measured
Where is collected information stored? (Accessible to those that need information)		WIMS
How long is the collected information stored?		1 year
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	Based upon IWIMS as it is already in place.
Proven? (Has shown demonstrated results)	Yes	If the work request is not completed in specified days, the QAE questions the service provider and initiates closure as close to the specified days as possible

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
5	Emergency Work Requests: 30 minutes (duty hours)/1 hour (non-duty hours); completed (safed) in 24 hours.	100% of the time	Records Review or Customer Contact, at least 1/week	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Is objective measured?	Yes	By contractors telling QAE he will not make the required time
Where is collected information stored? (Accessible to those that need information)		IWIMS
How long is the collected information stored?		1 year
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	Very little cost involved
Proven? (Has shown demonstrated results)	Yes	If the work request is not completed in specified time, the QAE questions the service provider and initiates closure as close to the specified time as possible

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
65	Direct Scheduled Work (DSW) Response: Respond on scene to emergency DSW's within one (1) hour during normal duty hours and two (2) hours during all other hours.	95 % of the time, measured on a weekly basis.	100% monitoring of emergency response times. Customer complaints	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Is objective measured?	Yes	Measured by contractor
Where is collected information stored? (Accessible to those that need information)		Logged in at Production Control
How long is the collected information stored?		1 year, longer if discrepancies appear
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	Requires least amount of time
Proven? (Has shown demonstrated results)	Yes	If the work request is not completed in specified time, the QAE questions the service provider and initiates closure as close to the specified time as possible

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
45	Inspect and Service Buildings and Sites for insect/rodent infestation. Buildings and sites inspected and serviced per Schedule.	1 DEFECT ALLOWED. Lot is # of buildings or sites required to be inspected/serviced during the month.	100% Inspection	1.6, Provides base support services	Operational Service Levels

Criteria	Yes/No	Justification
Is objective measured?	Yes	Work completed is compared to work projected for the month
Where is collected information stored? (Accessible to those that need information)		Contractor worksheets which are compiled at end of month
How long is the collected information stored?		1 year
Cost Effective? (Value of obtained information outweighs cost of seeking information)	Yes	Information collected is actually used for bid estimates for future bids. QAE follows-up (spot checks) to ensure the work has been completed.
Proven?(Has shown demonstrated results)	Yes	Contractor completes work in the next month for work not completed in the expected month.

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
72	Refuse Collection: Collect and dispose of waste (After contractor assumption of tasks Oct 2001). Refuse is picked up and disposed of IAW with SOW standards and schedules.	Completed on time. Pick up schedule deviation is less than 5%, measured on a monthly basis.	Customer complaints	1.6, Provides base support services	Time/Schedule

Criteria	Yes/No	Justification
Is objective measured?	No	Involves review of schedules if a customer complaint is validated
Where is collected information stored? (Accessible to those that need information)		No
How long is the collected information stored?		NA due to the information not being stored
Cost Effective? (Value of obtained information outweighs cost of seeking information)	No	It is not known if the line is cost effective
Proven? (Has shown demonstrated results)	No	Service provider just started in Oct of 2001

**NOTE: The remaining lines were not evaluated because the bases did not have a QASP or the bases had not implemented the service provider

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
30	Maintain real property to a standard commensurate with design criteria and accepted industry standards.	2 Defects. Lot is number of Emergency, Urgent, Routine, & Minor Construction unplanned work orders completed in a month.	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
31	Unplanned Work. Maintain a completion rate that meets or exceeds command standards for unplanned work orders.	0 Defects. Lot is number of unplanned work orders in a month.	Management Information System	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/ Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
33	Work shall meet all State codes and accepted industry standards.	1 Defect. Lot is number of planned work orders completed in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
34	Maintain a Planned Work Order completion rate that meets or exceeds command standards for programmed work orders.	0 Defects. Lot is number of planned work orders programmed and inserted in a month.	Checklist	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
35	Perform Recurring Work to a level commensurate with industry standards and manufacturers data	3 Defects. Lot is number of RWP items monthly.	Random Sampling	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Quality

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
36	Maintain a Completion Rate that meets or exceeds the command standard for critical and non-critical RWP.	0 Defects. Lot is number of RWP items scheduled monthly	Management Information System	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
152	Provide a trend analysis for the total maintenance cost based on maintained facility square footage (i.e., dollars per total building area, $/SF). Individual metrics should be developed for (1) labor, (2) material, and (3) total cost for maintenance and repair divided by the total maintained building square footage. Maintenance cost is the cost incurred by the service provider for performing maintenance and repair work. The area of buildings shall be for total maintained building square footage.		Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Finance/ Budget

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
155	Urgent DSW requirements must be completed within 7 calendar days	98% of all urgent DSW	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
156	All routine DSW requirements must be completed within 30 calendar days	95% of all routine DSW	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
157	All measured work orders (or planned work orders) must be completed by the estimated commitment date.	85% of all measured work orders (or planned work orders)	Monthly	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
3	Provide Production Control having an average turn around time, date of request to date of receipt by customer of work order approval/non-approval, 2 weeks or less	1 Defect. Lot is number of written work requests received in a month.	Random Sampling	1.2, Provides trained personnel and technical expertise to support operations worldwide	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
76	On-site response to emergency work orders	Within 30 minutes, 100% of the time (except AFWA and STRATCOM). Mitigate condition to Urgent or better within 24 hours of original notification 100% of the time.	Customer complaint.	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
154	All emergency direct scheduled work (DSW) requirements must be completed within 24 hours of notification	98% of all emergency DSW	Monthly	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
161	Mitigate emergency work requests within 24 hours and complete within 10 calendar days	100% of the time	Monitor customer complaints from ACC.	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
91	Reduce annual base-wide energy consumption	Reduce by an average of 2% per year to the federally mandated reduction of 35% from calendar year 1985 baseline by calendar year 2010	Review energy consumption metrics to determine if trends will meet reduction goals.	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
150	Measure/track the overall cost of utilities per square foot of buildings. This is accomplished by dividing the total cost of a utility by the gross square footage of facilities on the entire base. Example: We spent $5,958,108 on electricity in FY98 and had a gross square footage (of buildings) of 7,434,170. $5,958,108/7,434,170 results in $0.80144/sf for electricity. The metric will have three columns; one for electricity, one for gas, and one for water.	The goal is to show a decline in total energy costs per square foot.	Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
151	Measure the total annual British Thermal Unit (BTU) consumption per gross square foot compared to the 1985 baseline. The metric will be tracked and presented on a monthly basis to identify trends and get a prediction for meeting the annual reduction goal. Water is the exception. Water is reported in Millions of Gallons per gross square foot (Mgal/sf) reduction. The metric will have three columns for each month; one for electricity, one for natural gas, and one for water.	FY 1985 is the baseline chosen by the United States Congress.	Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Productivity

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
158	Measure the number of unscheduled outages of all critical systems. Critical systems include electrical distribution, runway lighting, water, natural gas, HVAC (heating, ventilating, & air conditioning), steam, and chill water systems. An outage can be defined as any interruption to the particular service or system that was not the result of a coordinated/planned outage for system repairs or upgrades. Outages shall be tracked by facility and systems.		Monthly	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Levels

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
140	Measure the unit cost per square foot for all the facilities used by or maintained by the service provider. Costs shall include all direct and indirect costs associated with the Service Provider effort to satisfy the PRD. Costs per square foot will be calculated by dividing the total cost of the services provided by the total square feet. This metric shall not include the costs of utilities.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
141	Measure the unit cost per occupant to maintain and operate the facilities used or maintained by the service provider (SP). Costs shall include all direct and indirect costs associated with the SP's effort to satisfy the PRDs. The metric will be calculated by dividing the service provider's total monthly costs by the total number of base occupants including all employees (civilian, military and contractor), all permanent residents of the base and TDY individuals. TDY individuals shall be computed in person-months based upon available person-days of temporary assignments. This metric shall not include the costs of utilities.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
142	Measure the critical asset downtime. The measurement will include all scheduled and unscheduled downtime. The scheduled and unscheduled downtime will be represented by two separate items on the metric.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
143	Measure the percentage of unscheduled work performed on the installation as a portion of total work performed. Unscheduled work is defined as any work the service provider or the Program Management Office has not foreseen.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Operational Service Levels

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
144	Measure the difference between budgets and actuals. Budget variance is a measurement of the difference between the programmed dollar amount and the actual final dollar amount of the reporting period. The total variance will be calculated for each reporting period. The differences shall be indicated mathematically as a percentage to develop a performance rate of increase or decrease. This information will provide an indicator of the Service Providers efficiency.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Finance/Budget

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
145	Measure the average schedule variance. Schedule variance is a measurement of the difference between scheduled completion dates and actual completion dates. The differences shall be shown in days. This information will provide an indicator of the Service Providers efficiency. This metric shall show the average schedule variance for all the projects in the reporting period.		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
159	Measure the mean time between failures of facility components, systems, and real property installed equipment (RPIE). The metric will serve as an indicator of facility components, systems, and RPIE that may be reaching their service life or need replacing, overhaul or maintenance action. Facility components, systems, and RPIE include roofs, HVAC, HVAC controls, plumbing, electrical systems, elevators, fire alarms, and fire suppression systems. RPIE is equipment that is permanently attached and is not considered unique to the occupants use of the facility. The service provider will use an industrial engineering analysis to determine the criticality associated with the time duration between each system's failure (i.e., 1-month between failures of a building's HVAC system may be a strong indicator of the need to replace the system; where 1-year between failures of a building's fire alarm may be necessary before any action is taken).		Monthly	1.7, Establishes quality standards and feedback mechanisms to assess performance in meeting mission requirements and customer's needs	Quality

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
23	Conduct an analysis of all work orders having a 10% or greater difference between planned and estimated hours.	1 Defect. Lot is number of completed, planned work orders for the month.	Checklist	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Time/Schedule

Appendix P. Operations Flight Function and Gauge Cluster Classifications of AFCESA Operations Flight Metrics

Appendix P contains the Operations Flight Function and Gauge Cluster classifications of the metrics found on the AFECSA website to evaluate the Operations Flight. Each of the 47 metrics is classified and listed separately.

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name	Gauge Cluster
M-1	Work Complete Emergency DSW Urgent DSW Routine DSW Measured WO	Look for trends	number of commitments, number completed, number of DSW backlogged	1.1, Operate, maintain, and repair	Operational Service Level
M-2	Open by category Emergency Urgent Routine Measured WO	Seek explanation of increasing number of open WO.	number opened by category	1.1, Operate, maintain, and repair	Work Product Delivered
M-3	Completed by category Emergency Urgent Routine Measured WO	Seek explanation for decreasing number of completed WOs.	number completed by category by month	1.1, Operate, maintain, and repair	Work Product Delivered
M-4	DSW Responsiveness Emergency Urgent Routine	LL: 90% BL: 100% UL: 110% E: 24 hrs U: 5 days R: 30 days	total time to accomplish work x 100% total allowed by category	1.1, Operate, maintain, and repair	Work Product Delivered
M-5	Work Satisfaction Emergency DSW Urgent DSW Routine DSW	LL: 60% BL: 80% UL: 100%	number of commitments completed on time x 100% number of total commitments	1.7, Quality standards	Time/Schedule
M-6	Scheduled Measured WOs	LL: 90% BL: 100% UL: 110%	total number of days to complete Wos x 100% total number of days scheduled to complete WOs (estimated completion date - start date)	1.7, Quality standards	Time/Schedule

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
M-7	WO life cycle (receipt to completion by category) Emergency DSW Urgent DSW Routine DSW	Look at increasing frequency of WOs within the different time periods. E: 24 hrs U: 5 days R: 30 days	number of WOs in different time frequencies (0-30 days, 30-60 days, etc.) for routine and in-service DSW & WO	1.7, Quality standards	Work Product Delivered
M-8	Backlog Total and by Zone by category	Look for explanation of increasing backlog.	number of WOs received *vs.* number of WOs completed	1.7, Quality standards	Operational Service Level
M-9	Satisfaction	LL: average of questions = 1 BL: average of questions = 4 UL: average of questions =7	Questionnaire asking customers about service. Use 7-point Likert scales where 1 is bad service and 7 is good service. Use approximately 20-25 questions and have at least 1/3 of customers' complete questionnaire.	1.7, Quality standards	Customer Satisfaction
M-10	RWP Hrs by Zone/Horizontal	LL: 90% BL: 100% UL: 110%	number of hours expended x 100% number of hours scheduled	1.1, Operate, maintain, and repair	Time/Schedule
M-11	RWP Schedule Effectiveness by Zone/Horizontal	LL: 90% BL: 100% UL: 110%	number of RWP completed x 100% number of RWP scheduled	1.1, Operate, maintain, and repair	Operational Service Level
M-12	RWP Items completed by month	Look for decreasing number of RWP items	number of RWP items completed	1.1, Operate, maintain, and repair	Operational Service Level
M-13	Pest Management	LL: 90% BL: 100% UL: 110%	number of commitments completed on time number of commitments	1.6, Base support	Operational Service Level

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
M-14	All type WO - job stoppage customer delays awaiting materials awaiting man-hours	Look at long work stoppage and explanation for stops	WO time line plotted and gaps identified for job stoppages with reason (need to get an average over all WOs)	1.7, Quality standards	Quality
M-15	Planning metric (Work hour Variance: Est. vs. Actual Work Hours)	LL: 90% BL: 100 UL: 110%	number of estimated hours x 100% actual work hours	1.7, Quality standards	Time/Schedule
M-16	Delinquent WO by work order category Emergency DSW Urgent DSW Routine DSW	LL: 0% BL: 10% UL: 25%	number of WOs not completed allowed time x 100% number of WO in category for the month	1.1, Operate, maintain, and repair	Time/Schedule
M-17	Material Received on Time by Category Emergency Urgent Routine	LL: 0% BL: 10% UL: 25	number of WOs material complete within allowed time x100% number of WOs in category for the month	1.12, Time and material accounting	Time/Schedule
M-18	Number of Material Complete WO	Look for increasing number of material complete WOs.	number of WOs that are material complete based on material completion date, number of estimated hours for WO	1.12, Time and material accounting	Work Product Delivered
M-19	Number of Days Material Complete	Look for increasing frequency of WOs in extended time categories.	number of WOs broken into number of days categories (0-30 days, 30-60 days, etc.)	1.12, Time and material accounting	Time/Schedule
M-20	Bench Stock Availability	LL: 60% BL: 80% UL: 100%	number of days available in bin for month x 100% total number of bin days	1.12, Time and material accounting	Work Product Delivered

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
M-21	Material Control Metric Time from 1st ordered to last received	LL: base established BL: command average UL: base established	[(item with earliest bill of material order date) - (item with latest received date)] averaged across all WO	1.12, Time and material accounting	Time/Schedule
M-22	Material Lead Time	LL: command average BL: command average UL: command average	count number of WOs using date of last item received stratified by age: 0-30 days, 31-60 days, etc.	1.12, Time and material accounting	Time/Schedule
M-23	Residue Material	Look for explanation of increasing residue as potential poor planning or stopped jobs.	$ value of material in residue plotted against previous FY average	1.12, Time and material accounting	Finance/Budget
M-24	Planning Metric (Amt of material ordered after WO start)	LL: 0% BL: 10% UL: 20%	number of items added after BOM firmed & WO start x 100% (number items ordered)]	1.12, Time and material accounting	Productivity
M-25	Time from Mtl Complete to Work start	LL: base established BL: base established UL: base established	[(Material Complete date - first Labor Charged date) for all WO]/ number of WOs	1.12, Time and material accounting	Productivity
M-26	Inventory Accuracy Rate (randomly selected items)	LL: 0 BL: 5% UL: 10%	number of incorrect inventory counts number of sampled inventory items	1.12, Time and material accounting	Quality
M-27	Inventory Unavailability	LL: 0 BL: base established UL: base established	number of items not provided for jobs when inventory in mgt system stated should have item	1.12, Time and material accounting	Productivity
M-28	Planning Backlog	LL: base established BL: base established UL: base established	number of WOs in planning	1.1, Operate, maintain, and repair	Work Product Delivered
M-29	Facility Surveys Completed	LL: 80% BL: 90% UL: 100%	number of facility surveys completed x 100% number of facility surveys scheduled	1.14, Facility manager program	Operational Service Level

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
M-30	Labor Utilization broken down by work category (emerg, urgent, training, etc.) for each Zone	Look for explanation of spikes in any category. Base should establish acceptable percentages of each category.	training % = hrs formal training (LUCs 20 & 32)/total direct hrs RWP % = hrs RWP (LUC 11) / total direct hrs DSW % = hrs on DSW (LUCs 12, 14, 15, 16)/ total direct hours Operations % = hrs operations (LUC 19)/ total direct hours Infrastructure WO % = hrs spent on infrastructure W/Os (LUCs 15 & 18)/ total direct hours Customer WO % = hrs customer WOs/ total direct hours 100 = sum of all above	1.10, Allocate Resources	Human Resources
M-31	Availability Rate	LL: 7% BL: 85% UL: 95%	number of direct labor hours by month x 100% number of total labor hours	1.10, Allocate Resources	Operational Service Level
M-32	Total WOs by location in process	Look at backlogged areas for explanation or potential problems.	number of WO in each work process step (planning, mat cntl, scheduling, etc.)	1.10, Allocate Resources	Productivity
M-33	Personnel	LL: 80% BL: 90% UL: 100%	number of personnel authorized x 100% number of personnel assigned	1.10, Allocate Resources	Human Resources
M-34	Self-Help Customers	Look for explanation of increasing or decreasing trends.	number of customers *vs.* previous FY	1.8, Self help	Work Product Delivered
M-35	Self-Help Expenditures	Look at trends	targeted $ self-help expenditures *vs.* actual $ self-help	1.8, Self help	Finance/Budget
M-36	Project Review Turnaround	Look at increasing trend of late projects	number of projects reviewed on time *vs.* late	1.7, Quality standards	Time/Schedule
M-37	WO/Completed Projects awaiting As-Built Update	Look at trends of increasing backlog	number of WOs completed requiring as-built updates	1.9, Future plans	Work Product Delivered
M-38	EMCS Reliability	LL: 80% BL: 90% UL: 100%	number of hours EMCS systems operational x 100% number of hours in period	1.2, Trained personnel	Work Product Delivered

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
M-39	Operational Systems Fire panels Transceivers Security systems	LL: 80% BL: 90% UL: 100%	[number of systems not fully operational (based on open WO)] / [Total number of systems]	1.5, Reliable utilities	Operational Service Level
M-40	Alarm Systems WOs Emergency Urgent Routine	Look at trends in delinquency	number of WOs *vs.* number of delinquent WOs	1.5, Reliable utilities	Work Product Delivered
M-41	Roofing	Look at trends in bad roofs not complete or under contract.	number of roofs identified as bad *vs.* number completed *vs.* number under contract	1.1, Operate, maintain, and repair	Operational Service Level
M-42	Utility Outages Power Water Gas Sewage	Look at increasing trend in other cause outages. May reflect poorly updated as-builts, need for new systems, etc.	number of outages scheduled *vs.* other cause (weather, AF breakage, system failure, contractor breakage) -- break out by other causes	1.5, Reliable utilities	Operational Service Level
M-43	Generator Operatability	LL: 80% BL: 90% UL: 100%	[(number of units x number of days in month) - number of days generators out of service]/[number of units x number of days in month]	1.5, Reliable utilities	Work Product Delivered
M-44	Aircraft Arrest System Operatability	LL: 90% BL: 95% UL: 100%	$\frac{\text{number of engagements}}{\text{number of attempts}}$	1.6, Base support	Operational Service Level
M-45	Utility Breaks Water Sewer Gas	Look at trends for possible systems that need replacing or increased maintenance.	number of utility breaks by utility	1.5, Reliable utilities	Operational Service Level
M-46	Utility Breaks Repaired by (Gov't, contractor) Water Sewer Gas	Increasing contractor breaks indicates potential poor as-builts.	number of breaks repaired source	1.5, Reliable utilities	Quality

ID	Objective	Threshold	Surveillance	Operations Flight Function	Gauge Cluster
M-47	Appliance Backup Stock	Provides guidance on when backups should be ordered.	number of backup per appliance type	1.12, Time and material accounting	Productivity

Appendix Q. Operations Flight Function and Gauge Cluster Classifications of AFCESA Template Metrics

Appendix Q contains the Operations Flight Function and Gauge Cluster classifications of the metrics found in the service delivery summary of the Operations Flight PWS template found on the AFECSA website. Each of the 9 metrics is classified and listed separately.

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-1	Treat customers politely, cheerfully and promptly	Customer service rating of at least 4.0 on a 5.0 scale	1.2, Provides trained personnel and technical expertise to support operations worldwide	Customer Service
T-2	Respond to and complete emergency, urgent, and routine service calls	95% of service calls are responded to and completed timely	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule
T-3	Maintain, repair, construct, and operate the supporting infrastructure ensuring cost effective and reliable support	100% of time	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Level
T-4	Provide economical maintenance, repair, construction, installation, operation, and service functions for real property, Real Property Installed Equipment (RPIE), and designated Equipment Authorized Inventory Data (EAID)	95% of scheduled inspections and/or work completed on time	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Level
T-5	Operate and maintain steam heat, hot water, chilled water, water treatment, and wastewater treatment plants	100% of time	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Level
T-6	Provide facility and base services protecting public health and base property, which includes custodial services, refuse collection and disposal, locksmith services, pest and animal control, hazardous waste collection and disposal, snow and ice control, grounds maintenance and landscaping. Provides services in accordance with submitted plans	Schedules are met 95% of time	1.6, Provides base support services	Work Product Delivered
T-7	Provide an effective design program and construction management to ensure projects are designed and construction work are completed timely and within budget.	100% of time	1.9, Develops and annually updates future plans for major work requirements (roofing, pavements, and protective coating)	Time/Schedule

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-8	Develop the CE Financial Plan	100% of time	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Finance/Budget
T-9	Respond to contingencies and natural disasters during normal and after duty hours within required time limits	100% of time	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Appendix R. Primary Evaluation of AFCESA Operations Flight Metrics

Appendix R contains each of the lines from Appendix P (46 AFCESA Operations Flight Metrics). The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-1	Work Complete Emergency DSW Urgent DSW Routine DSW Measured WO	Look for trends	number of commitments, number completed, number of DSW backlogged	1.1, Operate, maintain, and repair	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon number of commitments completed and backlogged
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon work orders completed and backlogged
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission, customer, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-2	Open by category Emergency Urgent Routine Measured WO	Seek explanation of increasing number of open WO.	number opened by category	1.1, Operate, maintain, and repair	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon number of open work orders
Quantifiable? (Reduced personal influence or judgment)	Yes	Number of work orders by category
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks the number of work orders

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-3	Completed by category Emergency Urgent Routine Measured WO	Seek explanation for decreasing number of completed WOs.	number completed by category by month	1.1, Operate, maintain, and repair	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Based upon the number of work orders completed
Quantifiable? (Reduced personal influence or judgment)	Yes	Number of completed work orders by category
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks the number of completed work orders

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-4	DSW Responsiveness Emergency Urgent Routine	LL: 90% BL: 100% UL: 110% E: 24 hrs U: 5 days R: 30 days	total time to accomplish work x 100% total allowed by category	1.1, Operate, maintain, and repair	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	There should not be a lower threshold limit
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the time to complete DSW
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-5	Work Satisfaction Emergency DSW Urgent DSW Routine DSW	LL: 60% BL: 80% UL: 100%	number of commitments completed on time x 100% number of total commitments	1.7, Quality standards	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon DSW completed on time
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of DSW completed on time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-6	Scheduled Measured WOs	LL: 90% BL: 100% UL: 110%	total number of days to complete Wos x 100% total number of days scheduled to complete WOs (estimated completion date - start date)	1.7, Quality standards	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the overall percentage to complete work orders
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of days to complete work orders
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-7	WO life cycle (receipt to completion by category) Emergency DSW Urgent DSW Routine DSW	Look at increasing frequency of WOs within the different time periods. E: 24 hrs U: 5 days R: 30 days	number of WOs in different time frequencies (0-30 days, 30-60 days, etc.) for routine and in-service DSW & WO	1.7, Quality standards	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the time to complete DSW and work orders
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the category (number of days) the work orders falls within
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks number of time frequencies

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-8	Backlog Total and by Zone by category	Look for explanation of increasing backlog.	number of WOs received *vs.* number of WOs completed	1.7, Quality standards	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks number of work orders in backlog
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon number of work orders received and completed
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks backlog

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-9	Satisfaction	LL: average of questions = 1 BL: average of questions = 4 UL: average of questions =7	Questionnaire asking customers about service. Use 7-point Likert scales where 1 is bad service and 7 is good service. Use approximately 20-25 questions and have at least 1/3 of customers' complete questionnaire.	1.7, Quality standards	Customer Satisfaction

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Customer Satisfaction
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon customer satisfaction of services received
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment is not reduced. Customer satisfaction varies upon the situation
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks how customers feel about the unit

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-10	RWP Hrs by Zone/Horizontal	LL: 90% BL: 100% UL: 110%	number of hours expended x 100% number of hours scheduled	1.1, Operate, maintain, and repair	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks hours expended versus hours scheduled
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the hours scheduled and worked
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-11	RWP Schedule Effectiveness by Zone/Horizontal	LL: 90% BL: 100% UL: 110%	number of RWP completed x 100% number of RWP scheduled	1.1, Operate, maintain, and repair	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of RWP
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the completion rate of RWP
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of RWP completed
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-12	RWP Items completed by month	Look for decreasing number of RWP items	number of RWP items completed	1.1, Operate, maintain, and repair	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of completed RWP
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Tracks the completed number of RWP
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of RWP completed
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the mission

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-13	Pest Management	LL: 90% BL: 100% UL: 110%	number of commitments completed on time / number of commitments	1.6, Base support	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of commitments
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of commitments
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of commitments completed on time
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the customer and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-14	All type WO - job stoppage customer delays awaiting materials awaiting man-hours	Look at long work stoppage and explanation for stops	WO time line plotted and gaps identified for job stoppages with reason (need to get an average over all WOs)	1.7, Quality standards	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work order stoppages
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the progress of work orders
Quantifiable? (Reduced personal influence or judgment)	No	Long work stoppages (threshold) are not defined
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission and customer

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-15	Planning metric (Work hour Variance: Est. vs. Actual Work Hours)	LL: 90% BL: 100 UL: 110%	number of estimated hours x 100% actual work hours	1.7, Quality standards	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks estimated hours versus actual work hours
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon hours to complete and estimate the work
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects the mission and customer

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-16	Delinquent WO by work order category Emergency DSW Urgent DSW Routine DSW	LL: 0% BL: 10% UL: 25%	number of WOs not completed allowed time x 100% number of WO in category for the month	1.1, Operate, maintain, and repair	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders not completed
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Tracks the percentage of work orders not completed in the allowed time
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of unfinished work orders
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-17	Material Received on Time by Category Emergency Urgent Routine	LL: 0% BL: 10% UL: 25	number of WOs material complete within allowed time x100% number of WOs in category for the month	1.12, Time and material accounting	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Surveillance is difficult to understand (numerator does not agree with objective)
Quantifiable? (Reduced personal influence or judgment)	No	Based upon the surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issued that tracks material received on time

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-18	Number of Material Complete WO	Look for increasing number of material complete WOs.	number of WOs that are material complete based on material completion date, number of estimated hours for WO	1.12, Time and material accounting	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	The objective is confusing because material complete WO is not defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon the objective classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks material and work orders

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-19	Number of Days Material Complete	Look for increasing frequency of WOs in extended time categories.	number of WOs broken into number of days categories (0-30 days, 30-60 days, etc.)	1.12, Time and material accounting	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	The objective is confusing because material complete WO is not defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon the objective classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks material and work orders

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-20	Bench Stock Availability	LL: 60% BL: 80% UL: 100%	$\frac{\text{number of days available in bin for month}}{\text{total number of bin days}} \times 100\%$	1.12, Time and material accounting	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Number of days in bin and total number of bin days are not defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks bench stock

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-21	Material Control Metric Time from 1st ordered to last received	LL: base established BL: command average UL: base established	[(item with earliest bill of material order date) - (item with latest received date)] averaged across all WO	1.12, Time and material accounting	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks time to receive all material
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon time to receive all material
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks ordering and receiving times

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-22	Material Lead Time	LL: command average BL: command average UL: command average	count number of WOs using date of last item received stratified by age: 0-30 days, 31-60 days, etc.	1.12, Time and material accounting	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	The surveillance is not defined very well
Quantifiable? (Reduced personal influence or judgment)	No	Based upon the surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks material and work order completion times

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-23	Residue Material	Look for explanation of increasing residue as potential poor planning or stopped jobs.	$ value of material in residue plotted against previous FY average	1.12, Time and material accounting	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost
Sensor?	No	No sensor listed
Frequency?	Yes	Annually
Understandable? (Not difficult to understand)	Yes	Tracks costs of material ordered for work but was not used
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the cost of excess material
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks extra cost due to excess material

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-24	Planning Metric (Amt of material ordered after WO start)	LL: 0% BL: 10% UL: 20%	number of items added after BOM firmed & WO start x 100% (number items ordered)]	1.12, Time and material accounting	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Items ordered for work
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	Items is not well defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon the surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks the items missed in the initial material order

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-25	Time from Mtl Complete to Work start	LL: base established BL: base established UL: base established	[(Material Complete date - first Labor Charged date) for all WO]/ number of WOs	1.12, Time and material accounting	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the amount of time to begin work once material is received
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the time to begin the work
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks material received and work start times

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-26	Inventory Accuracy Rate (randomly selected items)	LL: 0 BL: 5% UL: 10%	$\frac{\text{number of incorrect inventory counts}}{\text{number of sampled inventory items}}$	1.12, Time and material accounting	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Inventory counts
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of incorrect inventories
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of incorrect inventories and the number of inventories
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks accuracy of inventories

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-27	Inventory Unavailability	LL: 0 BL: base established UL: base established	number of items not provided for jobs when inventory in mgt system stated should have item	1.12, Time and material accounting	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Unavailable inventory
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the accuracy of inventory
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of times an item was not available when it was listed as available
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks accuracy of inventory system

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-28	Planning Backlog	LL: base established BL: base established UL: base established	number of WOs in planning	1.1, Operate, maintain, and repair	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of work orders that are in planning
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks work order backlog

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-29	Facility Surveys Completed	LL: 80% BL: 90% UL: 100%	number of facility surveys completed x 100% number of facility surveys scheduled	1.14, Facility manager program	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Surveys
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the completion rate of surveys
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of surveys completed
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-30	Labor Utilization broken down by work category (emerg, urgent, training, etc.) for each Zone	Look for explanation of spikes in any category. Base should establish acceptable percentages of each category.	training % = hrs formal training (LUCs 20 & 32)/total direct hrs RWP % = hrs RWP (LUC 11) / total direct hrs DSW % = hrs on DSW (LUCs 12, 14, 15, 16)/ total direct hours Operations % = hrs operations (LUC 19)/ total direct hours Infrastructure WO % = hrs spent on infrastructure W/Os (LUCs 15 & 18)/ total direct hours Customer WO % = hrs customer WOs/ total direct hours 100 = sum of all above	1.10, Allocate Resources	Human Resources

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	Surveillance not well defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks labor

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-31	Availability Rate	LL: 7% BL: 85% UL: 95%	number of direct labor hours by month x 100% number of total labor hours	1.10, Allocate Resources	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	No	Direct labor hours is not well defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon the surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks labor

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-32	Total WOs by location in process	Look at backlogged areas for explanation or potential problems.	number of WO in each work process step (planning, mat cntl, scheduling, etc.)	1.10, Allocate Resources	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks location of work orders within process
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of work orders found within each step of the process
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks location of work orders

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-33	Personnel	LL: 80% BL: 90% UL: 100%	number of personnel authorized x 100% number of personnel assigned	1.10, Allocate Resources	Human Resources

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Personnel
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the strength of manning
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon assigned authorized and assigned
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks manning strength

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-34	Self-Help Customers	Look for explanation of increasing or decreasing trends.	number of customers *vs.* previous FY	1.8, Self help	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Customers
Sensor?	No	No sensor listed
Frequency?	Yes	Annually
Understandable? (Not difficult to understand)	No	Tracks the number of customers
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of customers in a year
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks the number of customers

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-35	Self-Help Expenditures	Look at trends	targeted $ self-help expenditures *vs.* actual $ self-help	1.8, Self help	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks self help estimates and actual costs
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the estimates and actual costs
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks the estimated and actual costs

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-36	Project Review Turnaround	Look at increasing trend of late projects	number of projects reviewed on time *vs.* late	1.7, Quality standards	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Projects
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the project reviews completed on time
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the time to complete the review
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks late project reviews

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-37	WO/Completed Projects awaiting As-Built Update	Look at trends of increasing backlog	number of WOs completed requiring as-built updates	1.9, Future plans	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of work orders need as-built updates
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of work orders needing as-built updates
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks work orders requiring as-built updates

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-38	EMCS Reliability	LL: 80% BL: 90% UL: 100%	number of hours EMCS systems operational x 100% number of hours in period	1.2, Trained personnel	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks time that EMCS is operational
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the hours that EMCS is operational
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-39	Operational Systems Fire panels Transceivers Security systems	LL: 80% BL: 90% UL: 100%	[number of systems not fully operational (based on open WO)] / [Total number of systems]	1.5, Reliable utilities	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Operational system
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks system operations
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon number of systems not operating
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-40	Alarm Systems WOs Emergency Urgent Routine	Look at trends in delinquency	number of WOs *vs.* number of delinquent WOs	1.5, Reliable utilities	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Alarm system work orders
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	Delinquent work order is not well defined
Quantifiable? (Reduced personal influence or judgment)	No	Based upon surveillance classified as not understandable
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects mission and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-41	Roofing	Look at trends in bad roofs not complete or under contract.	number of roofs identified as bad *vs.* number completed *vs.* number under contract	1.1, Operate, maintain, and repair	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Roofs
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of bad roofs
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of roofs not meeting standards
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-42	Utility Outages Power Water Gas Sewage	Look at increasing trend in other cause outages. May reflect poorly updated as-builts, need for new systems, etc.	number of outages scheduled *vs.* other cause (weather, AF breakage, system failure, contractor breakage) -- break out by other causes	1.5, Reliable utilities	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Outages
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks outages and categorizes according to cause
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of outages and its cause
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-43	Generator Operatability	LL: 80% BL: 90% UL: 100%	[(number of units x number of days in month) - number of days generators out of service]/[number of units x number of days in month]	1.5, Reliable utilities	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	Yes	Monthly
Understandable? (Not difficult to understand)	Yes	Tracks the time a generator is out of operation
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the amount of time a generator does not operate
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-44	Aircraft Arrest System Operatability	LL: 90% BL: 95% UL: 100%	$\frac{\text{number of engagements}}{\text{number of attempts}}$	1.6, Base support	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Engagements
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks percentage of engagements
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of attempts and engagements for the arresting system
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer and mission

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-45	Utility Breaks Water Sewer Gas	Look at trends for possible systems that need replacing or increased maintenance.	number of utility breaks by utility	1.5, Reliable utilities	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Number of breaks
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of breaks in a utility system
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of breaks
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-46	Utility Breaks Repaired by (Gov't, contractor) Water Sewer Gas	Increasing contractor breaks indicates potential poor as-builts.	number of breaks repaired source	1.5, Reliable utilities	Quality

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Repair of breaks
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks who conducts repair of utility
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon how the break is classified
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks breaks

ID	Objective	Threshold	Surveillance	Operations Flight Function (Reference Name)	Gauge Cluster
M-47	Appliance Backup Stock	Provides guidance on when backups should be ordered.	number of backup per appliance type	1.12, Time and material accounting	Productivity

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Backups
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Tracks the number of backups per appliance
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon the number of backups per appliance
High Impact? (Affect Quality of Life, Mission, or Customer)	No	Administrative issue that tracks backups of appliance

Appendix S. Primary Evaluation of AFCESA Template Metrics

Appendix S contains each of the lines from Appendix Q (9 AFCESA Service Delivery Summary Metrics found on the Operations Flight competitive sourcing template). The primary line evaluation table associated with the metric and standard is listed below its respective metric and standard line.

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-1	Treat customers politely, cheerfully and promptly	Customer service rating of at least 4.0 on a 5.0 scale	1.2, Provides trained personnel and technical expertise to support operations worldwide	Customer Service

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Specific rating on customer service card
Sensor?	Yes	Customer service cards
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon customer service cards
Quantifiable? (Reduced personal influence or judgment)	No	Personal judgment is not reduced
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-2	Respond to and complete emergency, urgent, and routine service calls	95% of service calls are responded to and completed timely	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon timely response and completion of service calls
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon records or logs of service calls
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-3	Maintain, repair, construct, and operate the supporting infrastructure ensuring cost effective and reliable support	100% of time	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	No	Objective is too broad and there is not defined unit of measure
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	Too broad of an Objective
Quantifiable? (Reduced personal influence or judgment)	No	Due to broad objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-4	Provide economical maintenance, repair, construction, installation, operation, and service functions for real property, Real Property Installed Equipment (RPIE), and designated Equipment Authorized Inventory Data (EAID)	95% of scheduled inspections and/or work completed on time	1.1, Operate, maintain, repair, construct, and demolish real property and RPIE to accomplish the mission in most timely and economical manner	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Cost of maintenance, repair, etc.
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	Objective is too broad
Quantifiable? (Reduced personal influence or judgment)	No	Due to broad objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-5	Operate and maintain steam heat, hot water, chilled water, water treatment, and wastewater treatment plants	100% of time	1.5, Provides reliable, cost effective utilities to meet readiness needs, satisfy installation needs, and maintain quality of life.	Operational Service Level

Criteria	Yes/No	Justification
Defined unit of measure?	No	Operate and maintain is a broad objective (e.g., cost or run time)
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	Due to broad objective
Quantifiable? (Reduced personal influence or judgment)	No	Due to broad objective
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-6	Provide facility and base services protecting public health and base property, which includes custodial services, refuse collection and disposal, locksmith services, pest and animal control, hazardous waste collection and disposal, snow and ice control, grounds maintenance and landscaping. Provides services in accordance with submitted plans	Schedules are met 95% of time	1.6, Provides base support services	Work Product Delivered

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Services are to be provided according to schedule
Quantifiable? (Reduced personal influence or judgment)	No	Due to broad objective. Specific areas within each service are not identified
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-7	Provide an effective design program and construction management to ensure projects are designed and construction work are completed timely and within budget.	100% of time	1.9, Develops and annually updates future plans for major work requirements (roofing, pavements, and protective coating)	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time and cost
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	The threshold does not match the objective because work will not be completed on time and within budget 100% of the time
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch between threshold and objective (personal judgment is not decreased)
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer, mission, and quality of life

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-8	Develop the CE Financial Plan	100% of time	1.12, Maintains a time and material accounting system to collect and report the cost of doing business	Finance/Budget

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Financial plan
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	No	The threshold of 100% of the time is not understandable when applied to the objective of developing a financial plan
Quantifiable? (Reduced personal influence or judgment)	No	Due to mismatch between threshold and objective (personal judgment is not decreased)
High Impact? (Affect Quality of Life, Mission, or Customer)	No	This is internal to the CE unit (bookkeeping that does not affect the customer)

ID	Objective	Threshold	Operations Flight Function	Gauge Cluster
T-9	Respond to contingencies and natural disasters during normal and after duty hours within required time limits	100% of time	1.3, Maintains capability to respond to and eliminate any emergency condition 24 hours a day	Time/Schedule

Criteria	Yes/No	Justification
Defined unit of measure?	Yes	Time
Sensor?	No	No sensor listed
Frequency?	No	No frequency listed
Understandable? (Not difficult to understand)	Yes	Based upon response times
Quantifiable? (Reduced personal influence or judgment)	Yes	Based upon response times
High Impact? (Affect Quality of Life, Mission, or Customer)	Yes	Affects customer and mission

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NOTE: "+" indicates the documents used in this research effort

Vita

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His first assignment was at Offutt AFB where he was assigned as a project programmer. While stationed at Offutt, he deployed overseas in 1998 to Ali Al Saleem Air Base, Kuwait as the Chief of Engineering, 9th Expeditionary Air Group. In August 2001, he entered the Graduate School of Engineering and Management, Air Force Institute of Technology. Upon graduation, he will be assigned to the DETCAT Ops Officer position in Guam.

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14. ABSTRACT The Performance Work Statement (PWS), which defines the requirements and shapes the outcome of the activity under contract, and the Quality Assurance Surveillance Plan (QASP), which is vital in identifying what is to be evaluated, become critical documents as the Air Force enters into more competitive sourcing contracts. Currently, contractors and Most Efficient Organizations (MEO) are evaluated by the QASP based upon the requirements found in the PWS. It is imperative the PWS and QASP documents have adequate performance metrics and that they are applied appropriately to evaluate the contractor or MEO.

This research collected PWS and QASP documents from eight Civil Engineer Operations Flights across the Air Force that have completed or are undergoing competitive sourcing. 161 performance standards and metrics were identified and an evaluation was conducted on them to determine if the standards and metrics were sufficient to evaluate the contractor or MEO. The two-part evaluation system was developed from metric design literature and features from both Total Quality Management and the Government Performance Results Act. The evaluation system was also applied to Air Force Civil Engineer Support Agency metrics and templates.

The results indicate critical areas of Civil Engineer Operations Flight are not sufficiently evaluated due to insufficient and improperly designed standards and metrics. As a result of this research, 19 metrics were developed for evaluating the Operations Flight along with an evaluation system that can be used to assess the design of metrics currently used by any organization.

15. SUBJECT TERMS

Metric Evaluation, Competitive Sourcing Evaluation, Metric Design

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